

COMPREHENSIVE SERVICE FOR METAL GRATINGS



GRUPO RELESA

Your project, our greater commitment

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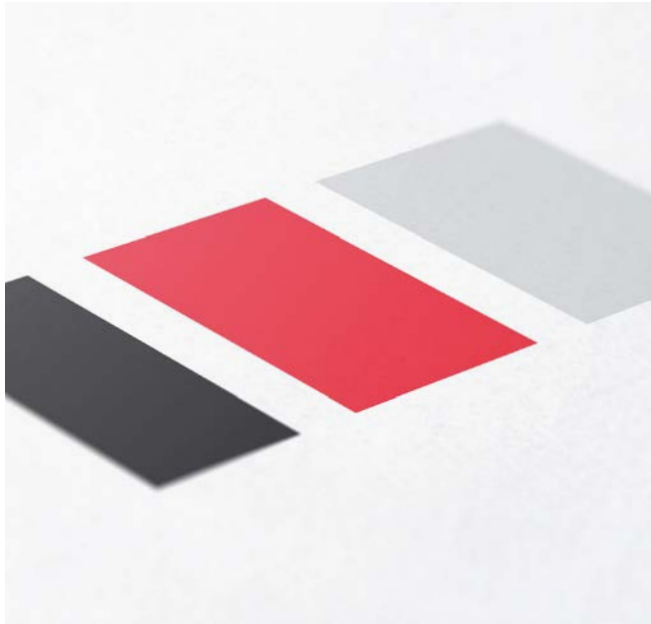




GRUPO RELESA

Who we are

We are an international company that offers a **comprehensive grating service** whose aim is to meet the needs of our customers, always offering a quality service. We are backed by **more than 30 years of experience** within the sector in which we have carried out **projects all over the world**.



Thanks to the three companies that make up our group, **we have full control over the processes of design and production of our gratings** which are manufactured in Spain. The flexibility derived from this control, coupled with the use of innovative techniques, allows us to offer our customers a **unique service in our industry**.

We are faithful to our philosophy of offering **a service of maximum quality**, guaranteed by the best professionals in the sector and by a constant R&D development; **we put at your disposal our Technical Department** that will help you manage the capabilities of your project.

Throughout our history **we have managed to unify all the production process in our headquarters in the Region of Murcia (Spain)** that in connection with our headquarters in Morocco, allows us to work in any corner of the world.

Our companies

Composed of companies that develop each of the stages of the manufacture of metal gratings, **Grupo Relesa includes in its facilities the entire production process.** We are efficient and dynamic, and we are able to respond to all your requests.



LIDECOR

CUSTOM CUTTING LINE

In Lidecor we take care of the first phase of all projects of the Grupo Relesa and, thanks to our dedication, professionalism and the use of advanced technology, we were able to give the best cutting service.

lidecor.com



RELESA

MANUFACTURE OF METAL GRATINGS

In Relesa we take care of the handling and the different ways of manufacturing metal gratings such as electrowelded gratings, pressed gratings and manual gratings. Our products are able to be adapted to any project whether civil or industrial.

relesa.com



GALVAME

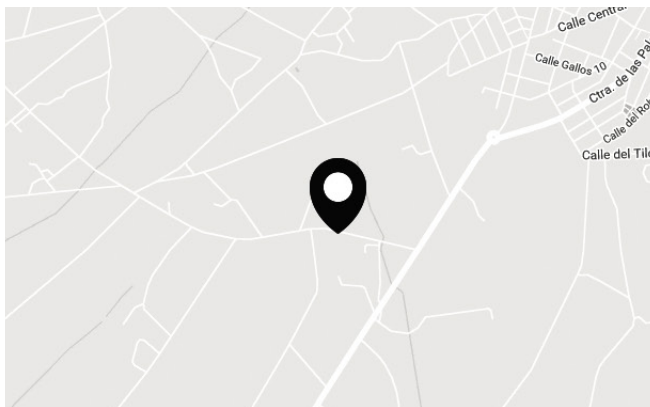
HOT-DIP GALVANIZING

In Galvame we carry out the process of galvanizing by immersion in molten zinc, a treatment that provides protection and embellish the metal grating to ensure their use and conservation over time.

galvame.com

Our offices

Since its foundation, Grupo Relesa has offered a comprehensive service to our customers. The opening of our headquarters in Morocco represents another step in our process of total internationalization, a line of development that we combine with the work of our branches, which provide direct and professional treatment.



HEADQUARTERS IN SPAIN

-  Grupo Relesa
-  Ctra. Fuente Álamo - Las Palas Km. 3,5 30320 Fuente Álamo, Murcia (Spain)
-  T +34 968 597 536
-  info@gruporelesa.com



MOROCCAN OFFICE

-  Relesa Maroc
-  Parc d'activites Oukacha, 2 Batiment n°12 du Bloc C Ain Sebäa- Casablanca (Maroc)
-  T 0522 343 287 / 522 343 292
-  relema@relesa.com

We have **representatives** to provide you with a more direct, personal and professional treatment. You can see if we have delegates near you directly on our website **gruporelesa.com** or contact us through our phone number **+34 968 597 536**.

Certificates and approvals

We put at your disposal certificates and approvals at accredit our productive capacity, quality and commitment to environmental management.



UNE-EN-ISO-9001
Quality management systems



UNE-EN-ISO-14001
Environmental management systems



Manufacture of
electroforged gratings



Manufactured under ANSI standards
ANSI NAAMM 531-09



ASME Section IX
Welding and Brazing Qualification



Reaction to
Fire classification



Load Tables Certificate UPCT
(Universidad Politécnica de Cartagena)

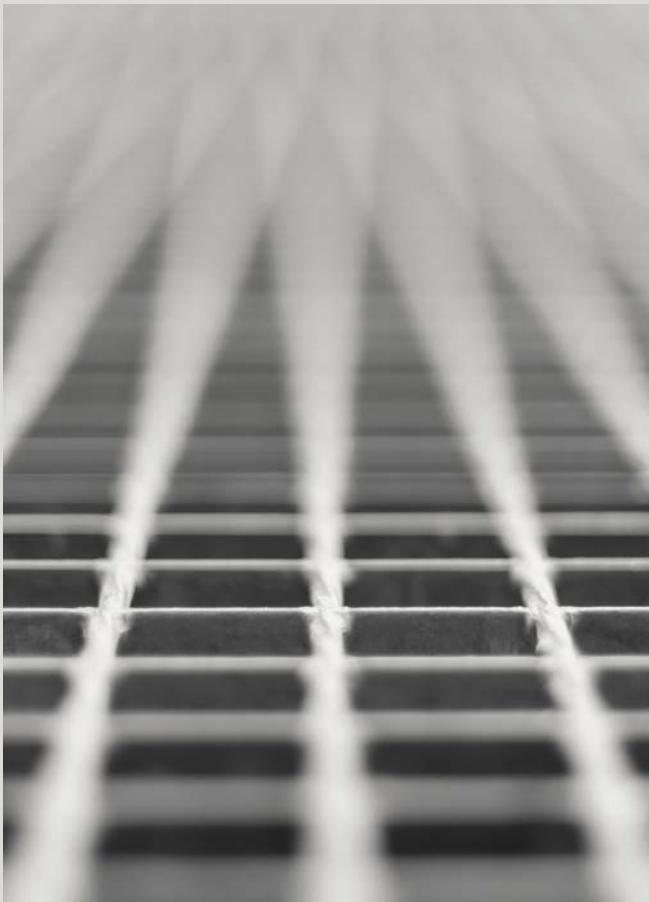


Electrowelded, manual and pressed
gratings
EN 1090-1:2009+A1:2011 EXC2
2449/CPR/AC-WL76



The grating

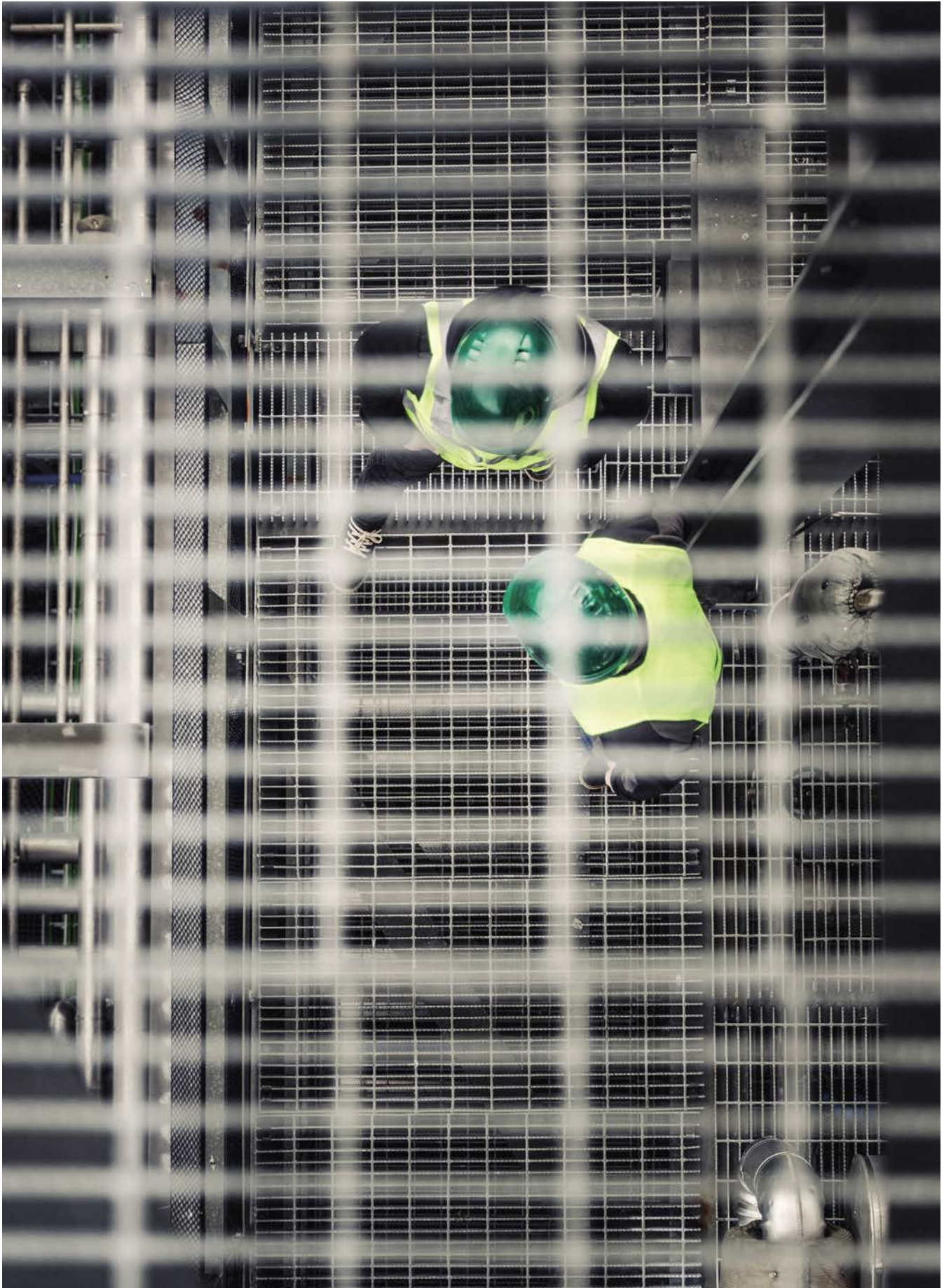
The great versatility and aesthetics of the metal grating has diversified its use for all kinds of applications within industry and construction. Its **high resistance combined with a low specific weight, easy installation or a minimum requirement of maintenance**, are just some of the features that professionals rely on this product to ensure optimum results.



The metal grating is a lattice structure formed by **bearing bars attached at right angles to cross pieces**. The points of connection between the two types of profiles are defined as joints. The nature of the union joint determines the type of grating: **Electrowelded grating, pressed grating or manual grating**.

Bearing bars, defined by their height (h) and thickness (e), are arranged in parallel with each other to **support and transmit the loads to the bracket**. Perpendicularly to these, the cross-cutting elements, twisted squares, plain rods or separator bars, unite and keep the distance between the bearing bars constant. On the perimeter of the piece, the binding bars keep the gratings tiff and tight, which can be complemented with the introduction of **cuts, skirting boards, angular profiles and security elements to prevent slippage and the passage of objects**.

Hot-rolled carbon steel is the most common material used in the manufacture of metal grating with qualities and finishes that are determined according to stresses. Grupo Relesa recommends **hot dip galvanizing** which is a surface treatment that provides the essential protection against corrosion and oxidation. In addition to carbon steel, we also manufacture in **stainless steel, corten steel and GRP** with different finishes and coatings.



INDUSTRIAL PLANT, Spain



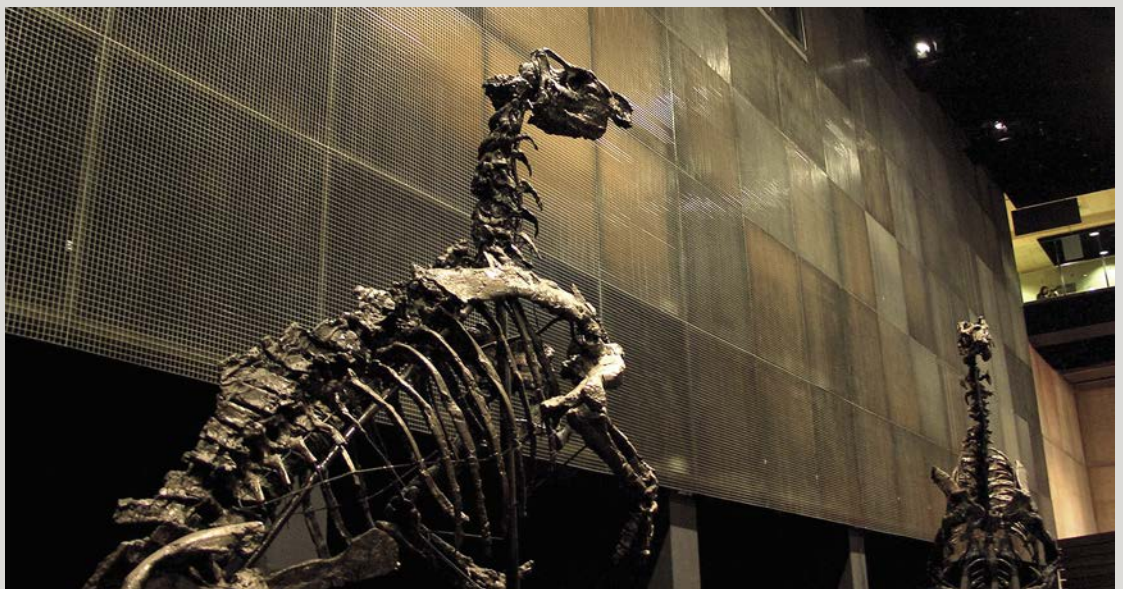
WIND TURBINES, Spain



HEADQUARTERS EMT, Madrid - Spain



COSMO CAIXA, Barcelona - Spain



PARKING, San Sebastián - Spain



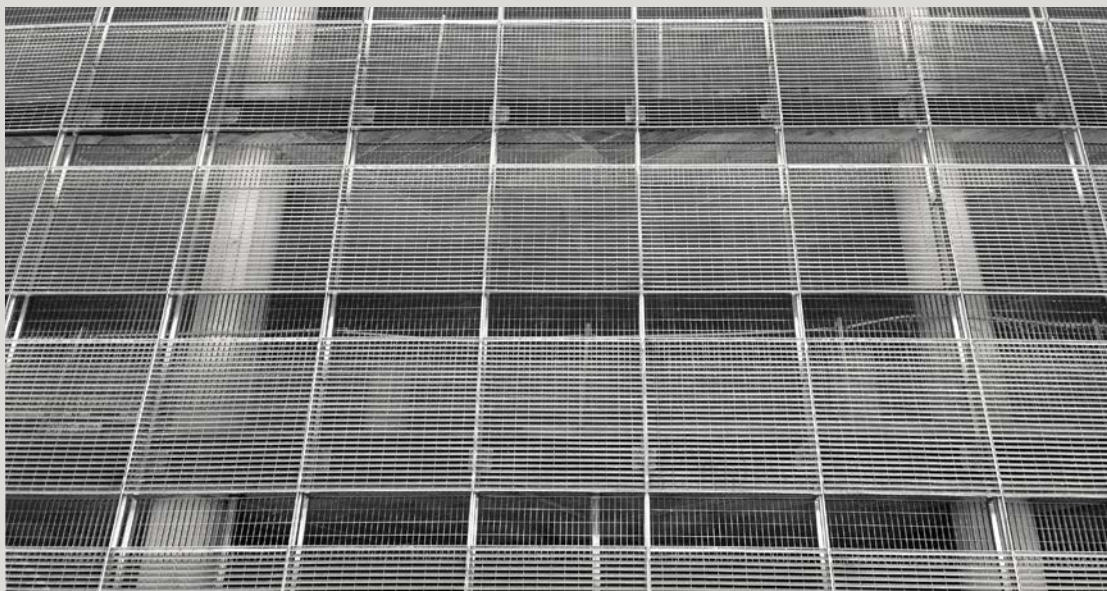
DISTRITO TELEFÓNICA, Madrid - Spain



CASTLE OF PAMBRE, Lugo - Spain



FGC VALLPARADIS, Barcelona - Spain



EL PRAT AIRPORT, Barcelona - Spain



HANGING BRIDGE, Valladolid - Spain



ENAGAS, Huelva - Spain

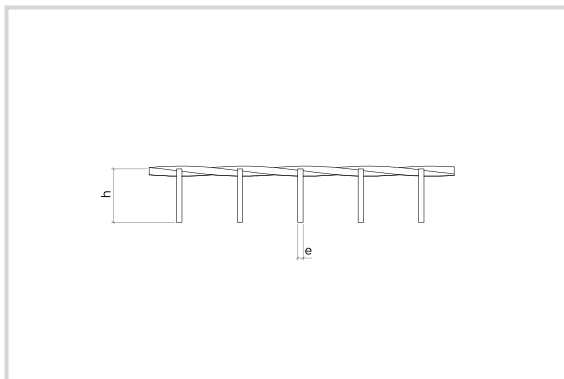
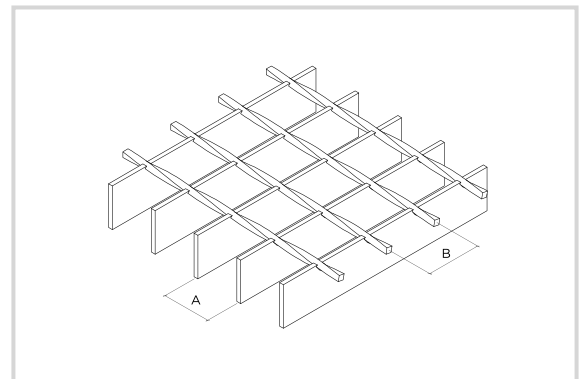


BRAUN, Barcelona - Spain



1. Electrowelded grating

The electrowelded or electroforged grating are types of metallic grating where the union of **bearing bars** and cross-pieces, **twisted squares or plain rod**, is carried out by the combined action of **fusion welding, without filler material**, and pressure concentrated on the joints. The rigid connection at each intersection is guaranteed, as are the **monolithic nature of the grating** and the absence of gaps that undermine the protection of the galvanized steel, and can be manufactured in carbon steel, galvanized or without treatment, and in stainless steel.

*Side view**Isometric view*

Main elements of a electrowelded grating:
A, Distance between axes of bearing bars
B, Distance between axes of twisted squares
h, Bearing bars height
e, Bearing bars thickness

ELECTROWELDED GRATING WITH TWISTED SQUARE



This welded grating is one of our most commonly used industrial products. Lightness, stiffness and bearing capacity make it an ideal choice for your project.



Table of manufacture

MESH SIZE (AxB)													
(A)	(B)												
21	23	24	38	48	-	50,8	76	76,2	-	100	101,6	105	-
25	23	-	38	48	-	-	76	-	-	-	-	105	-
30	23	24	38	-	50	50,8	76	-	90	100	101,6	105	-
34	23	24	38	-	50	50,8	76	76,2	90	100	102	105	135
40	23	-	38	48	-	-	76	-	90	-	-	105	-
42	23	24	38	48	50	-	76	76,2	-	100	101,6	105	-
50	23	-	38	48	-	-	76	-	-	-	-	105	-
60	-	24	38	-	50	-	76	-	-	100	-	-	-
62	-	24	38	-	50	-	76	-	-	100	-	-	-
63	23	-	38	48	-	-	76	-	-	-	-	105	-
68	23	24	38	-	50	-	76	-	-	100	-	105	135
84	23	-	38	48	-	-	76	-	-	-	-	105	-
90	-	24	38	-	50	-	76	-	-	100	-	-	-
102	23	-	38	-	-	-	76	-	90	-	-	105	-
103	-	24	38	-	50	-	76	-	-	100	-	-	-
120	-	24	38	-	50	-	76	-	-	100	-	-	-

BEARING BAR SECTION (h/e)			
e=2mm	e=3mm	e=4mm	e=5mm
20/2	20/3	20/4	20/5
25/2	25/3	25/4	25/5
30/2	30/3	30/4	30/5
-	32/3	-	32/5
35/2	35/3	35/4	35/5
-	38/3	-	38/5
40/2	40/3	40/4	40/5
45/2	45/3	45/4	45/5
50/2	50/3	50/4	50/5
60/2	60/3	60/4	60/5
70/2	70/3	70/4	70/5
-	-	-	80/5
-	-	-	90/5
-	-	-	100/5



ELECTROWELDED GRATING WITH PLAIN ROD

Frequently used electrowelded grating for vertical and decorative purposes.

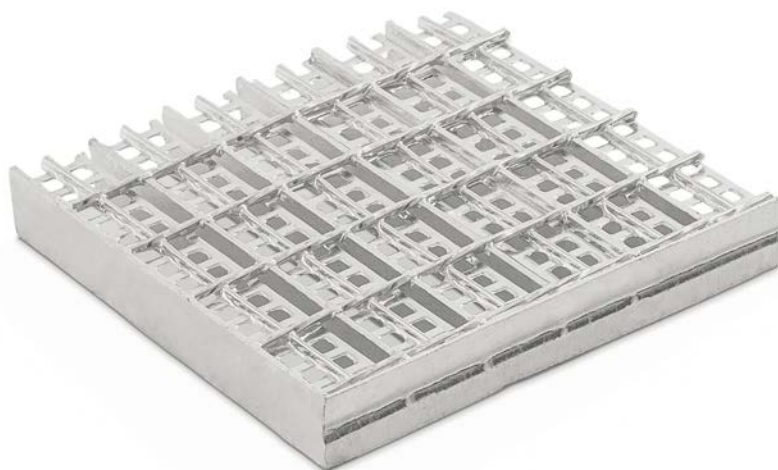


Table of manufacture

MESH SIZE (AxB)													
(A)	(B)												
21	23	24	38	48	-	50,8	76	76,2	-	100	101,6	105	-
25	23	-	38	48	-	-	76	-	-	-	-	105	-
30	23	24	38	-	50	50,8	76	-	90	100	101,6	105	-
34	23	24	38	-	50	50,8	76	76,2	90	100	102	105	135
40	23	-	38	48	-	-	76	-	90	-	-	105	-
42	23	24	38	48	50	-	76	76,2	-	100	101,6	105	-
50	23	-	38	48	-	-	76	-	-	-	-	105	-
60	-	24	38	-	50	-	76	-	-	100	-	-	-
62	-	24	38	-	50	-	76	-	-	100	-	-	-
63	23	-	38	48	-	-	76	-	-	-	-	105	-
68	23	24	38	-	50	-	76	-	-	100	-	105	135
84	23	-	38	48	-	-	76	-	-	-	-	105	-
90	-	24	38	-	50	-	76	-	-	100	-	-	-
102	23	-	38	-	-	-	76	-	90	-	-	105	-
103	-	24	38	-	50	-	76	-	-	100	-	-	-
120	-	24	38	-	50	-	76	-	-	100	-	-	-

BEARING BAR SECTION (h/e)			
e=2mm	e=3mm	e=4mm	e=5mm
20/2	20/3	20/4	20/5
25/2	25/3	25/4	25/5
30/2	30/3	30/4	30/5
-	32/3	-	32/5
35/2	35/3	35/4	35/5
-	38/3	-	38/5
40/2	40/3	40/4	40/5
45/2	45/3	45/4	45/5
50/2	50/3	50/4	50/5
60/2	60/3	60/4	60/5
70/2	70/3	70/4	70/5
-	-	-	80/5
-	-	-	90/5
-	-	-	100/5

ELECTROWELDED GRATING WITH PROTECTION PROFILE



Electrowelded grating that incorporates a protection profile that prevents the passage of objects larger than 8 millimetres in order to comply with Spanish regulations according to Royal Decree 486/1997.

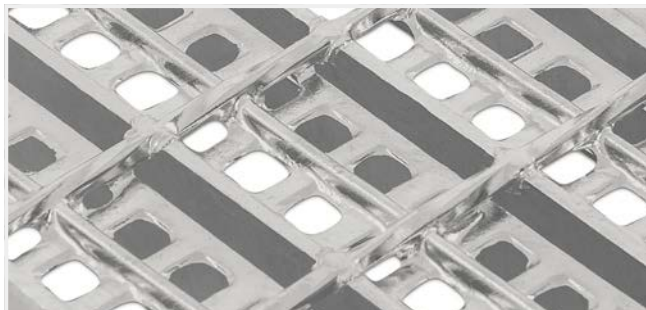


Table of manufacture

MESH SIZE (AxB)			
(A)	(B)		
34	38	76	101
40	38	76	101

BEARING BAR SECTION (h/e)	
e=2mm	e=3mm
20/2	20/3
25/2	25/3
30/2	30/3
32/2	32/3
35/2	35/3
38/2	38/3
40/2	40/3
45/2	45/3
50/2	50/3

ELECTROWELDED GRATING WITH HALF MOON SERRATIONS



Grating with a non-slip surface thanks to the half moon serration applied to the bearing bars that guarantee a minimum degree of slipperiness, R11 and maximum R12, depending on the size of the mesh and the thickness of the bearing bar.

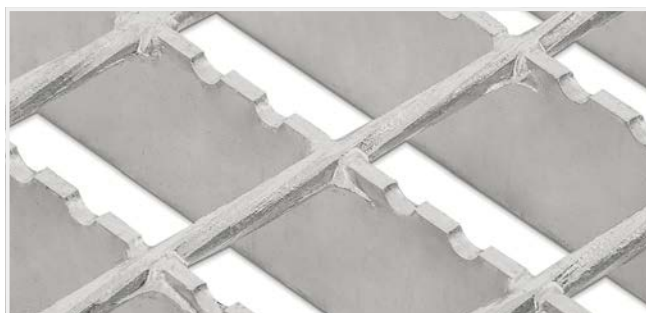
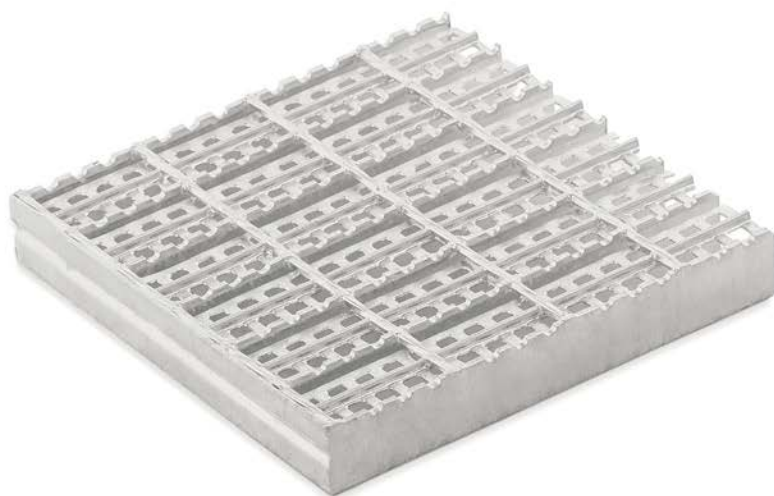


Table of manufacture

MESH SIZE (AxB)				
(A)	(B)			
21	-	50	76	101
30	38	50	76	101
34	38	50	-	101
42	-	50	76	101

BEARING BAR SECTION (h/e)			
e=2mm	e=3mm	e=4mm	e=5mm
20/2	20/3	20/4	20/5
25/2	25/3	25/4	25/5
30/2	30/3	30/4	30/5
-	32/3	-	32/5
35/2	35/3	35/4	35/5
-	38/3	-	38/5
40/2	40/3	40/4	40/5
45/2	45/3	45/4	45/5
50/2	50/3	50/4	50/5
60/2	60/3	60/4	60/5
70/2	70/3	70/4	70/5
-	-	-	80/5
-	-	-	90/5
-	-	-	100/5

ELECTROWELDED GRATING WITH PROTECTION PROFILE AND HALF MOON SERRATIONS



Grating with a non-slip surface thanks to the half moon serration applied to the bearing bars that guarantee a minimum degree of slipperiness, R11 and maximum R12, depending on the size of the mesh and the thickness of the bearing bar. It also incorporates a protection profile that prevents the passage of objects larger than 8 millimetres in order to comply with Spanish regulations according to Royal Decree 486/1997.

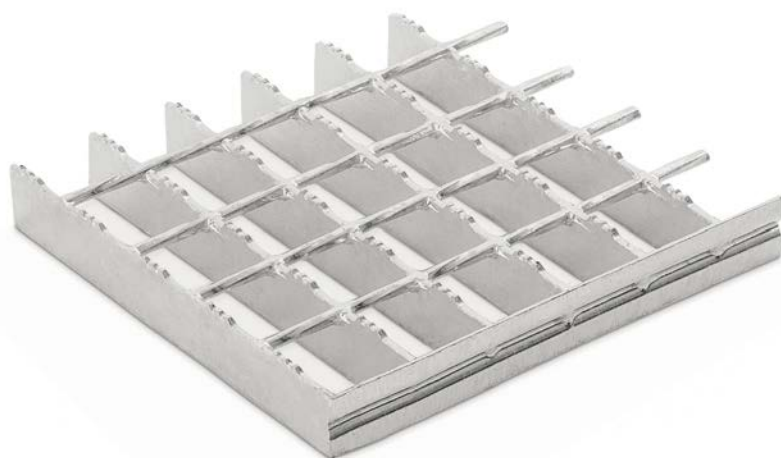


Table of manufacture

MESH SIZE (AxB)			
(A)	(B)		
34	38	76	101
40	38	76	101

BEARING BAR SECTION (h/e)	
e=2mm	e=3mm
-	20/3
25/2	25/3
30/2	30/3
35/2	35/3
40/2	40/3
45/2	45/3
50/2	50/3

ELECTROWELDED GRATING WITH DISCONTINUOUS SERRATIONS



Grating with a non-slip surface, thanks to the discontinuous serrations on the bearing bars, which ensures a maximum anti-slip degree of R13.

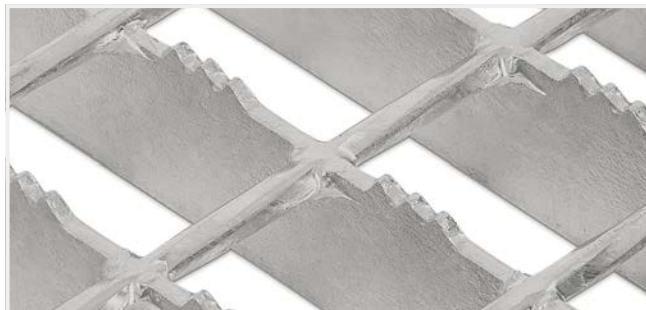


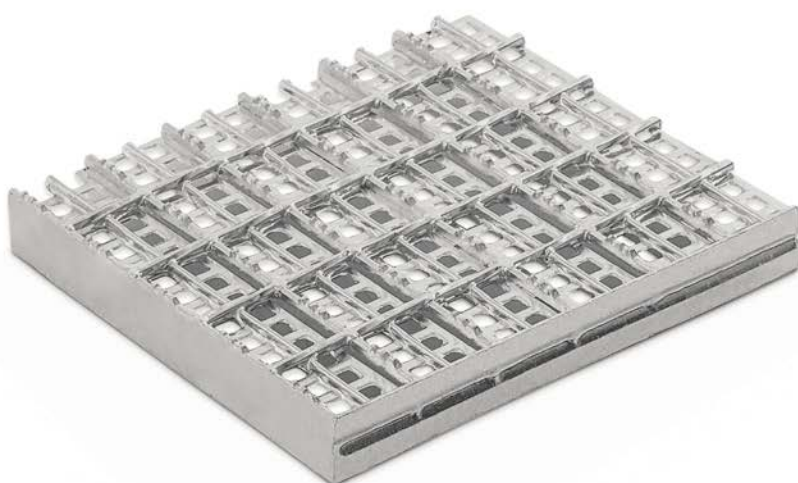
Table of manufacture

MESH SIZES (AxB) (2 AND 3mm THICKNESS)			
(A)	(B)		
21	38	76	114
25	38	76	114
30	38	76	114
34	38	76	114
42	38	76	114

BEARING BAR SECTION (h/e)		
e=2mm	e=3mm	e=4mm
20/2	20/3	20/4
25/2	25/3	25/4
30/2	30/3	30/4
-	32/3	-
35/2	35/3	35/4
-	38/3	-
40/2	40/3	40/4
45/2*	45/3*	45/4
50/2*	50/3*	-
60/2*	60/3*	-

MESH SIZES (AxB) (4mm THICKNESS)	
(A)	(B)
25	35 70
30	35 70
34	35 70
40	35 70

ELECTROWELDED GRATING WITH PROTECTION PROFILE AND DISCONTINUOUS SERRATIONS



The discontinuous serration in the bearing bars ensures the highest degree anti-slip decking (R13), while the protection profile prevents the passage of objects larger than 8 millimetres in order to comply with Spanish regulations, according to Royal Decree 486/1997.

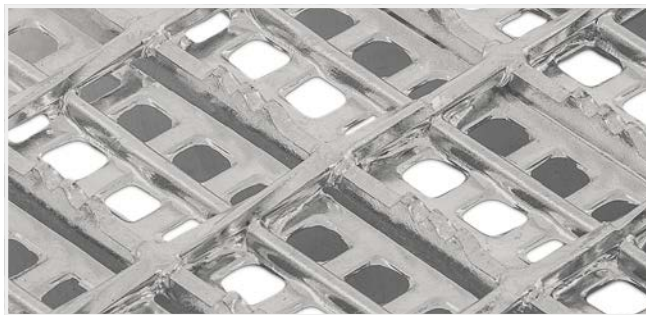


Table of manufacture

MESH SIZE (AxB)		
(A)	(B)	
34	38	76
40	38	76

BEARING BAR SECTION (h/e)	
e=2mm	e=3mm
-	20/3
25/2	25/3
30/2	30/3
32/2	32/3
35/2	35/3
38/2	38/3
40/2	40/3
45/2	45/3
50/2	50/3

THE OFFSHORE TYPE ELECTROWELDED GRATING

Electrowelded grating designed for use in the offshore industry, especially as flooring on oil rigs.

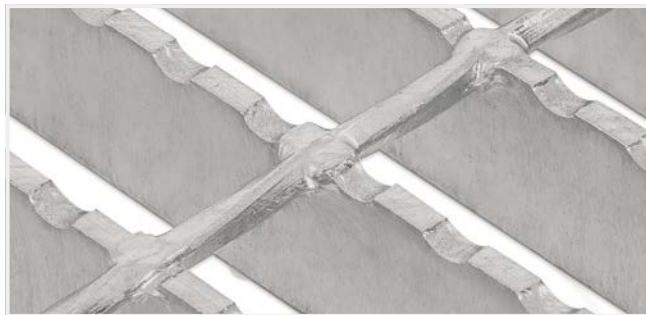


Table of manufacture

MESH SIZE (AxB)		
(A)	(B)	
34	50,8	101,6
40	50,8	101,6
41	50,8	101,6

BEARING BAR SECTION (h/e)	
e=3mm	e=5mm
25/3	25/5
30/3	30/5
32/3	32/5
35/3	35/5
38/3	38/5
40/3	40/5
-	50/5
-	60/5



THE SAFETY OFFSHORE TYPE ELECTROWELDED GRATING



Electrowelded grating, designed for the offshore industry, which incorporates intermediate rods between bearing serrated bars, to prevent the passage of larger objects of 15 millimetres and meet the specifications of the Norwegian Petroleum Directorate.

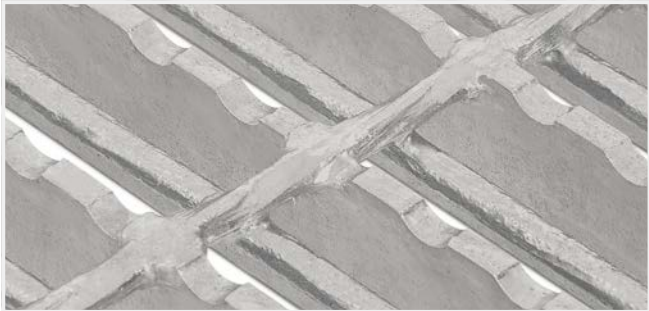
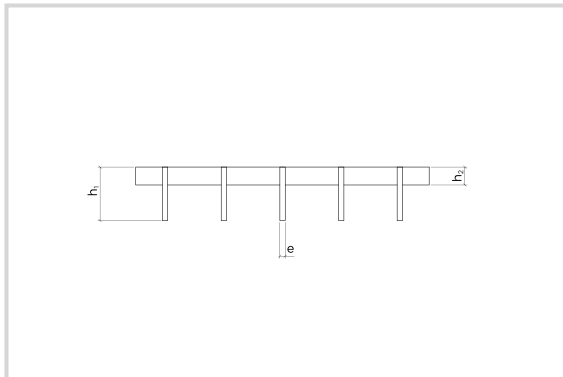
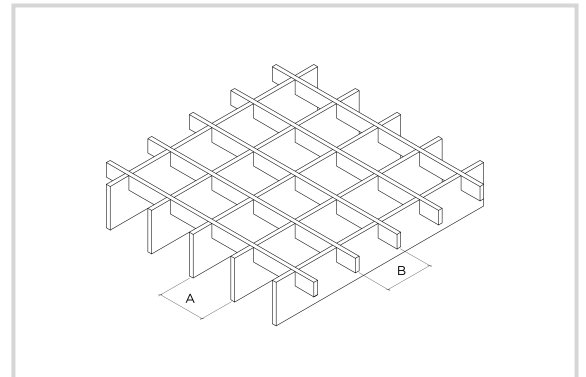


Table of manufacture

MESH SIZE (AxB)			BEARING BAR SECTION (h/e)	
(A)	(B)		e=3mm	e=5mm
34	50,8	101,6	25/3	25/5
40	50,8	101,6	30/3	30/5
41	50,8	101,6	32/3	32/5
			35/3	35/5
			38/3	38/5
			40/3	40/5
			-	50/5
			-	60/5

2. Pressed grating

The pressed grating is type of metal grating with **bearing bars and separator bars**, where the union between both is **made using pressure**, giving as a result a product with **excellent mechanical performance and high aesthetic value**. This model of grating is supplied with binding bars, in T or welded, which ensures the rigidity of the piece. The pressed grating can be manufactured in carbon steel, stainless steel and corten steel.

*Side view**Isometric view*

Main elements of a pressed grating:

A, distance between axes of bearing bars

B, distance between axes of separator bars

h_1 , bearing bars height

h_2 , separator bars height

e , bars thickness

PRESSED GRATING WITH DIFFERENT STRIPS



Grating composed of bearing and separator bars of different heights, whose joint is performed mechanically without welding, thus achieving a product with an excellent aesthetic finish.



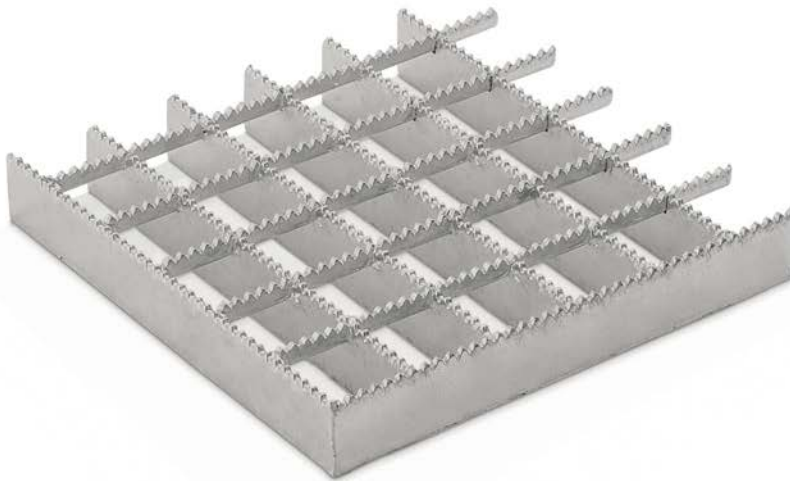
Table of manufacture

MESH SIZE (AxB) FOR CARBON AND CORTEN STEEL										
(A)	(B)									
10	10	20	30	40	50	60	70	80	90	100
11,1	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
20	10	20	30	40	50	60	70	80	90	100
22,2	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
30	10	20	30	40	50	60	70	80	90	100
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
40	10	20	30	40	50	60	70	80	90	100
44,4	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
50	10	20	30	40	50	60	70	80	90	100
55,5	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
60	10	20	30	40	50	60	70	80	90	100
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
70	10	20	30	40	50	60	70	80	90	100
77,7	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
80	10	20	30	40	50	60	70	80	90	100
88,8	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
90	10	20	30	40	50	60	70	80	90	100
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-

BEARING BAR SECTION (h _b) / SEPARATOR BAR SECTION (h _s)	
e=2mm	e=3mm
25/10	25/10
30/10	30/10
35/10	35/10
40/20	40/20
45/20	45/20
50/20	50/20

MESH SIZE (AxB) FOR STAINLESS STEEL										
(A)	(B)									
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-

PRESSED GRATING WITH DIFFERENT STRIPS AND CONTINUOUS SERRATIONS



Grating composed of bearing and separator bars of different heights, whose joint is performed mechanically without welding. In order to improve the anti-slip level, a continuous serration is applied to bearing bars, separator bars or both bars.

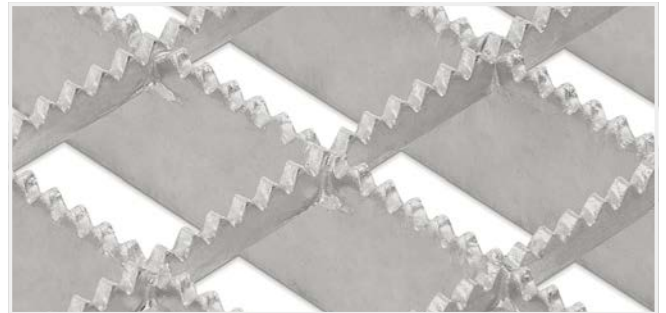


Table of manufacture

MESH SIZE (AxB) FOR CARBON AND CORTEN STEEL										
(A)	(B)									
10	10	20	30	40	50	60	70	80	90	100
11,1	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
20	10	20	30	40	50	60	70	80	90	100
22,2	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
30	10	20	30	40	50	60	70	80	90	100
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
40	10	20	30	40	50	60	70	80	90	100
44,4	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
50	10	20	30	40	50	60	70	80	90	100
55,5	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
60	10	20	30	40	50	60	70	80	90	100
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
70	10	20	30	40	50	60	70	80	90	100
77,7	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
80	10	20	30	40	50	60	70	80	90	100
88,8	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
90	10	20	30	40	50	60	70	80	90	100
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-

BEARING BAR SECTION (h ₁) / SEPARATOR BAR SECTION (h ₂)	
e=2mm	e=3mm
25/10	25/10
30/10	30/10
35/10	35/10
40/20	40/20
45/20	45/20
50/20	50/20

MESH SIZE (AxB) FOR STAINLESS STEEL										
(A)	(B)									
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-

PRESSED GRATING WITH DIFFERENT STRIPS AND HALF MOON SERRATIONS



Grating composed of bearing and separator bars of different heights, whose joint is performed mechanically without welding. To improve the anti-slip level a half moon serration is applied to bearing bars, separator bars or both bars.

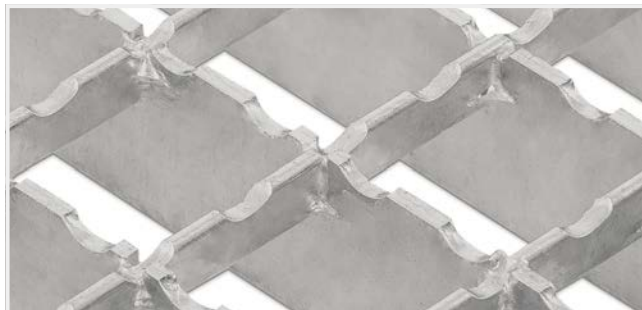


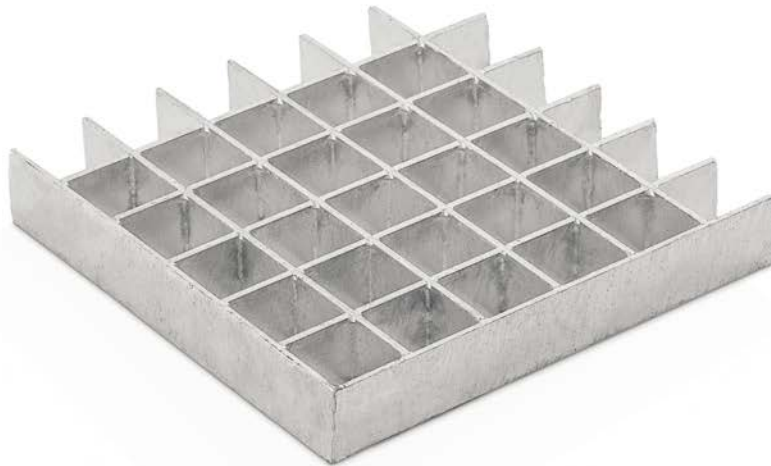
Table of manufacture

MESH SIZE (AxB) FOR CARBON AND CORTEN STEEL										
(A)	(B)									
10	10	20	30	40	50	60	70	80	90	100
11,1	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
20	10	20	30	40	50	60	70	80	90	100
22,2	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
30	10	20	30	40	50	60	70	80	90	100
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
40	10	20	30	40	50	60	70	80	90	100
44,4	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
50	10	20	30	40	50	60	70	80	90	100
55,5	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
60	10	20	30	40	50	60	70	80	90	100
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
70	10	20	30	40	50	60	70	80	90	100
77,7	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
80	10	20	30	40	50	60	70	80	90	100
88,8	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
90	10	20	30	40	50	60	70	80	90	100
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-

BEARING BAR SECTION (h ₁) / SEPARATOR BAR SECTION (h ₂)	
e=2mm	e=3mm
25/10	25/10
30/10	30/10
35/10	35/10
40/20	40/20
45/20	45/20
50/20	50/20

MESH SIZE (AxB) FOR STAINLESS STEEL										
(A)	(B)									
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-

PRESSED GRATING WITH EQUAL STRIPS



Grating composed of bearing and separator bars of the same height, whose joint is performed mechanically without welding, thus achieving a product with an excellent aesthetic finish.

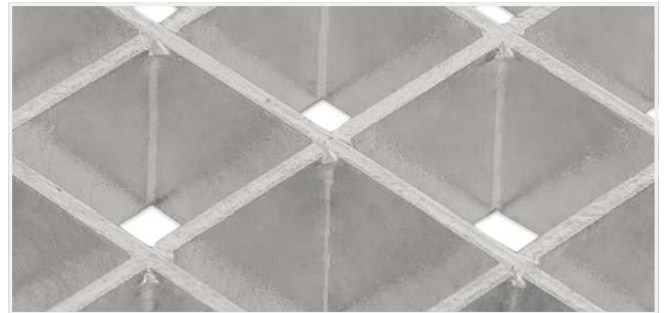


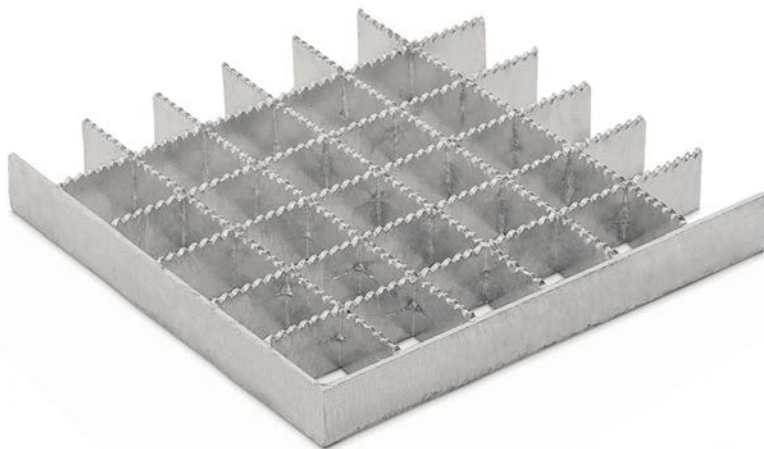
Table of manufacture

MESH SIZE (AxB) FOR CARBON AND CORTEN STEEL										
(A)	(B)									
10	10	20	30	40	50	60	70	80	90	100
11,1	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
20	10	20	30	40	50	60	70	80	90	100
22,2	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
30	10	20	30	40	50	60	70	80	90	100
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
40	10	20	30	40	50	60	70	80	90	100
44,4	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
50	10	20	30	40	50	60	70	80	90	100
55,5	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
60	10	20	30	40	50	60	70	80	90	100
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
70	10	20	30	40	50	60	70	80	90	100
77,7	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
80	10	20	30	40	50	60	70	80	90	100
88,8	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
90	10	20	30	40	50	60	70	80	90	100
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-

BEARING BAR SECTION (h ₁) / SEPARATOR BAR SECTION (h ₂)	
e=2mm	e=3mm
25/25	25/25
30/30	30/30
35/35	35/35
40/40	40/40
45/45	45/45
50/50	50/50

MESH SIZE (AxB) FOR STAINLESS STEEL										
(A)	(B)									
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	

PRESSED GRATING WITH EQUAL STRIPS AND CONTINUOUS SERRATIONS



Grating composed of bearing and separator bars of the same height, whose joint is performed mechanically without welding. In order to improve the anti-slip level a continuous serration is applied to bearing bars, separator bars or both bars.

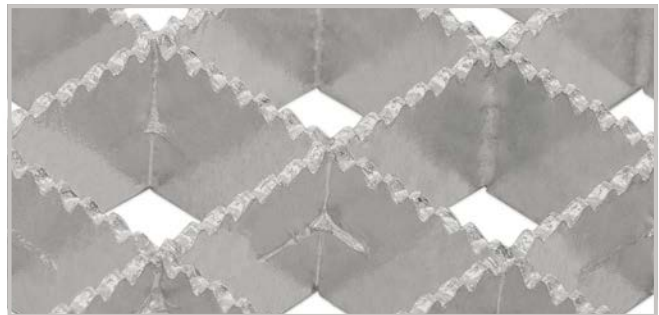


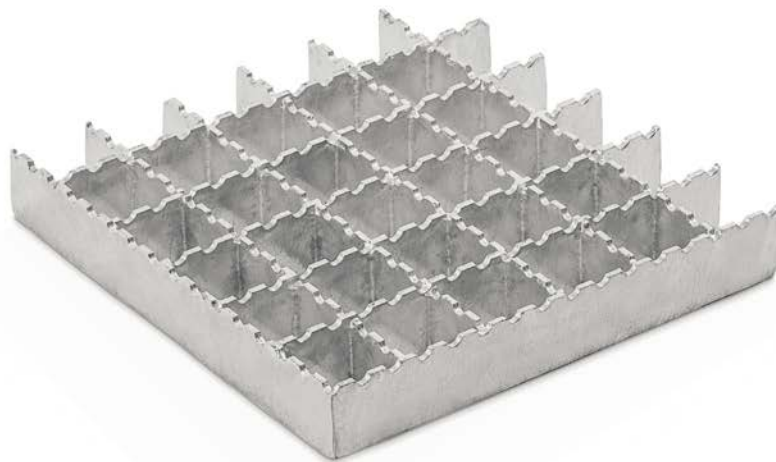
Table of manufacture

MESH SIZE (AxB) FOR CARBON AND CORTEN STEEL										
(A)	(B)									
10	10	20	30	40	50	60	70	80	90	100
11,1	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
20	10	20	30	40	50	60	70	80	90	100
22,2	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
30	10	20	30	40	50	60	70	80	90	100
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
40	10	20	30	40	50	60	70	80	90	100
44,4	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
50	10	20	30	40	50	60	70	80	90	100
55,5	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
60	10	20	30	40	50	60	70	80	90	100
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
70	10	20	30	40	50	60	70	80	90	100
77,7	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
80	10	20	30	40	50	60	70	80	90	100
88,8	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
90	10	20	30	40	50	60	70	80	90	100
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-

BEARING BAR SECTION (h ₁) / SEPARATOR BAR SECTION (h ₂)	
e=2mm	e=3mm
25/25	25/25
30/30	30/30
35/35	35/35
40/40	40/40
45/45	45/45
50/50	50/50

MESH SIZE (AxB) FOR STAINLESS STEEL										
(A)	(B)									
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	

PRESSED GRATING WITH EQUAL STRIPS AND HALF MOON SERRATIONS



Grating composed of bearing and separator bars of the same height, whose joint is performed mechanically without welding. In order to improve the anti-slip level a corrugated serrated bar is applied to bearing bars, separator bars or both bars.

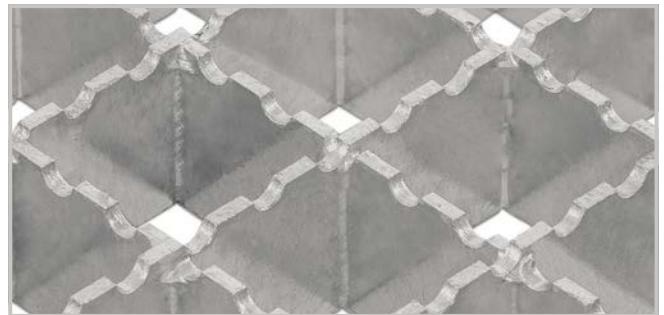


Table of manufacture

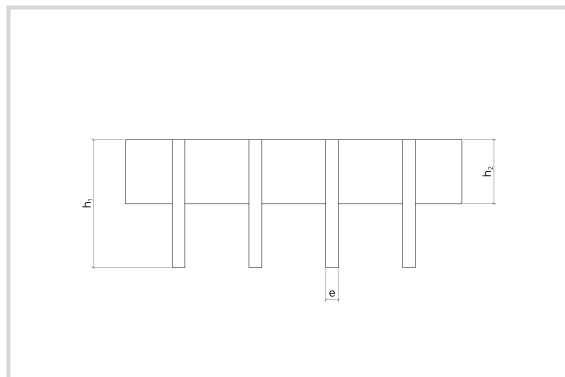
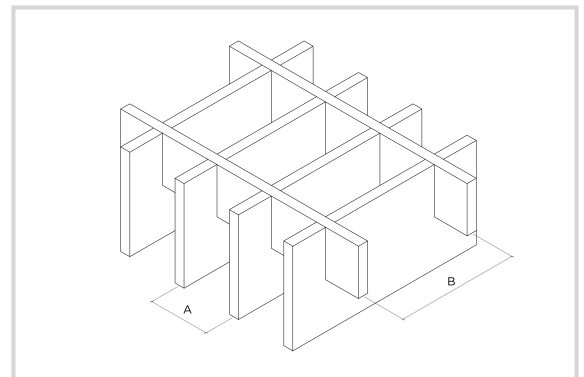
MESH SIZE (AxB) FOR CARBON AND CORTEN STEEL										
(A)	(B)									
10	10	20	30	40	50	60	70	80	90	100
11,1	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
20	10	20	30	40	50	60	70	80	90	100
22,2	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
30	10	20	30	40	50	60	70	80	90	100
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
40	10	20	30	40	50	60	70	80	90	100
44,4	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
50	10	20	30	40	50	60	70	80	90	100
55,5	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
60	10	20	30	40	50	60	70	80	90	100
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
70	10	20	30	40	50	60	70	80	90	100
77,7	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
80	10	20	30	40	50	60	70	80	90	100
88,8	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-
90	10	20	30	40	50	60	70	80	90	100
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	-

BEARING BAR SECTION (h ₁) / SEPARATOR BAR SECTION (h ₂)	
e=2mm	e=3mm
25/25	25/25
30/30	30/30
35/35	35/35
40/40	40/40
45/45	45/45
50/50	50/50

MESH SIZE (AxB) FOR STAINLESS STEEL										
(A)	(B)									
33,3	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	
66,6	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	
99,9	11,1	22,2	33,3	44,4	55,5	66,6	77,7	88,8	99,9	

3. Manual grating

The manual is a type of metallic grating composed of **bearing bars and separator bars**, where the connection between the two is done through the joining of both without pressure and weld beads in alternating joints. The **elevated thicknesses of the rods give high mechanical performance**. This model of grating is supplied with binding bars, which ensures the rigidity of the piece. Can be manufactured in carbon steel, stainless steel and corten steel.

*Side view**Isometric view*

Main elements of a manual grating:

A, distance between axes of bearing bars

B, distance between axes of separator bars

h_1 , bearing bars height

h_2 , separator bars height

e , bars thickness

MANUAL GRATING



Grating composed of bearing bars and separators of high thickness that confer high mechanical performance.



Table of manufacture

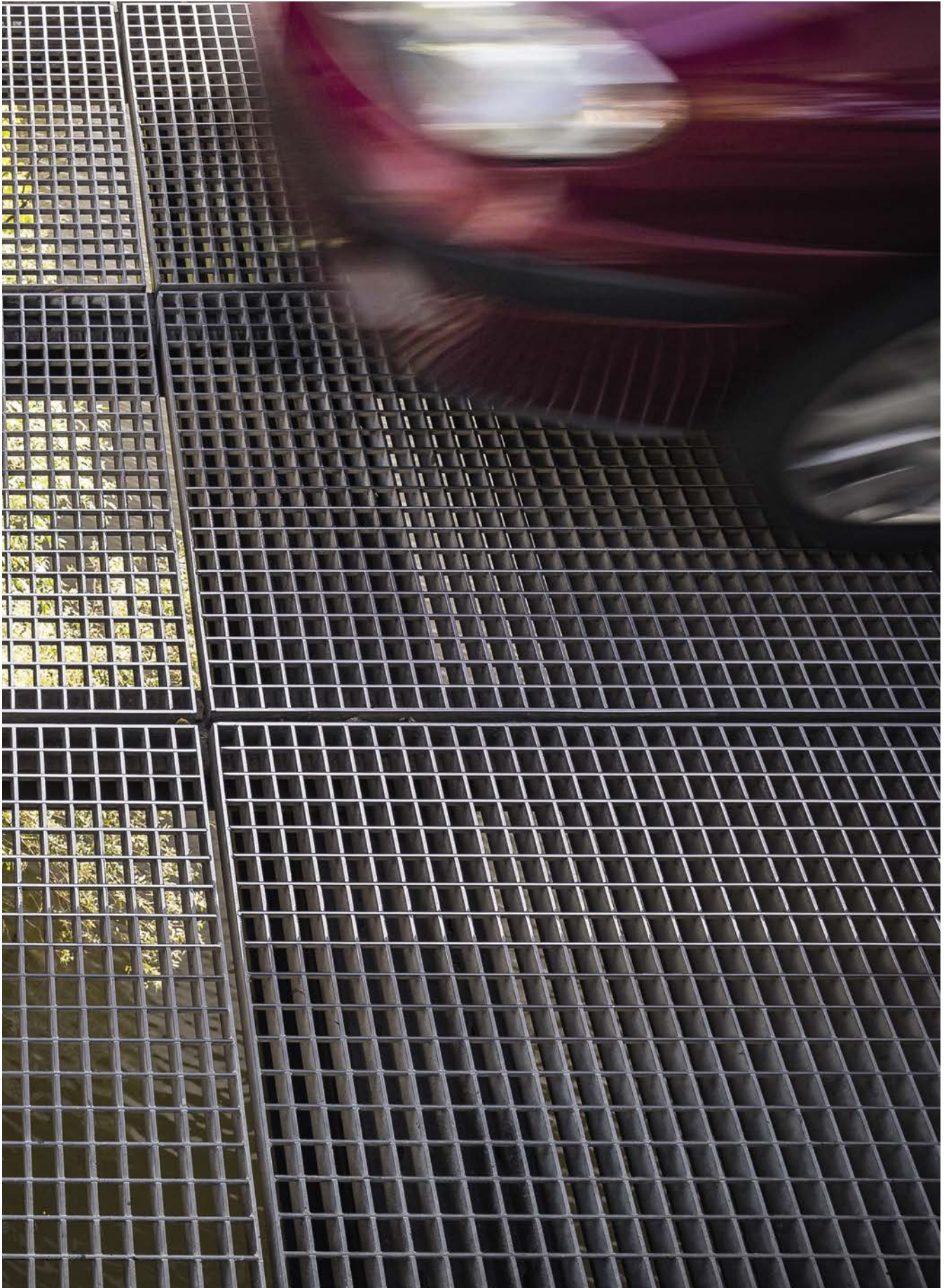
MESH SIZES (AxB) FOR 4mm THICKNESS							
(A)	(B)						
22	22	44	66	88	110	132	
35	35	70	105	140	-	-	
44	22	44	66	88	110	132	
66,2	22	44	66	88	110	132	
70	35	70	105	140	-	-	
88,3	22	44	66	88	110	132	
105	35	70	105	140	-	-	
110	22	44	66	88	110	132	
132	35	70	105	140	-	-	
140	22	44	66	88	110	132	

MESH SIZES (AxB) FOR 10mm THICKNESS						
(A)	(B)					
50	50	87	100	150	200	
100	50	-	100	150	200	
150	50	-	100	150	200	
200	50	-	100	150	200	

BEARING BAR SECTION (h/e)			
e=4mm	e=5mm	e=8mm	e=10mm
20/4	20/5	-	-
25/4	25/5	-	-
30/4	30/5	-	-
35/4	35/5	-	-
40/4	40/5	40/8	40/10
50/4	50/5	50/8	50/10
60/4	60/5	60/8	60/10
70/4	70/5	70/8	70/10
80/4	80/5	80/8	80/10
90/4	90/5	90/8	90/10
100/4	100/5	70/8	100/10

MESH SIZES (AxB) FOR s=8 Y 10mm		
(A)	(B)	
48	48	96
96	48	96

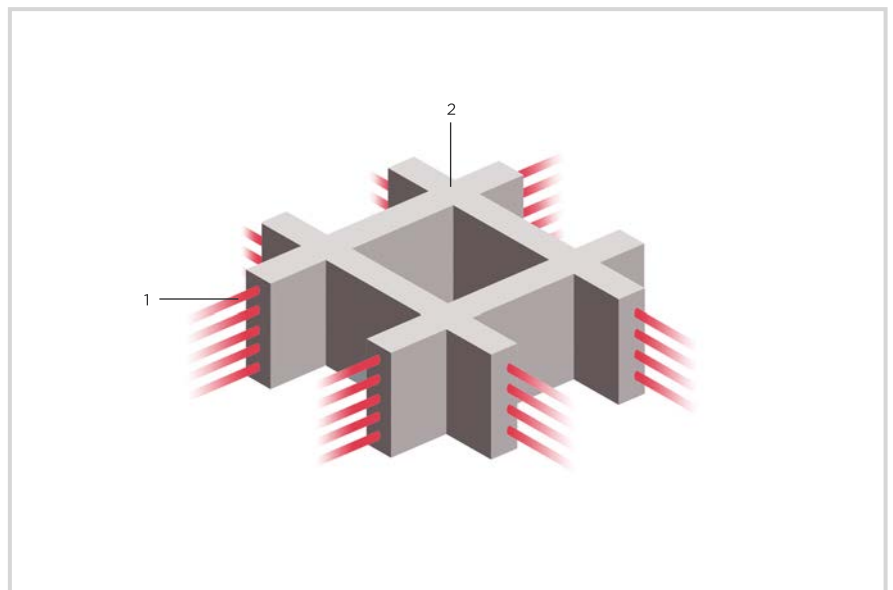
MESH SIZES (AxB) FOR 5mm THICKNESS						
(A)	(B)					
15	15	30	45	60	75	
30	15	30	45	60	75	
35	35	70	105	140	175	
45	15	30	45	60	75	
60	15	30	45	60	75	
70	35	70	105	140	175	
75	15	30	45	60	75	
80	35	70	105	140	175	
105	35	70	105	140	175	
140	35	70	105	140	175	
175	35	70	105	140	175	



4. GRP Grating

The Glass fibre Reinforced Plastic is a combined material made up of a **matrix of resin and reinforced with glass fibre filaments**. The latter provides the compound mechanical strength, dimensional stability and thermal resistance. For its part, the resin provides dielectric strength and chemical resistance and ensures durability against external agents.

The material is defined by the type of resin that makes up the grating with different properties between them, and they are isophthalic, orthophthalic and vinylesters. The surface finish of the product is anti-slip due to the application of a layer of quartz sand.

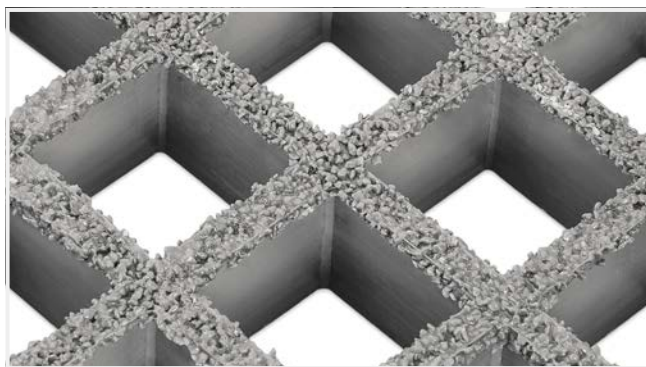
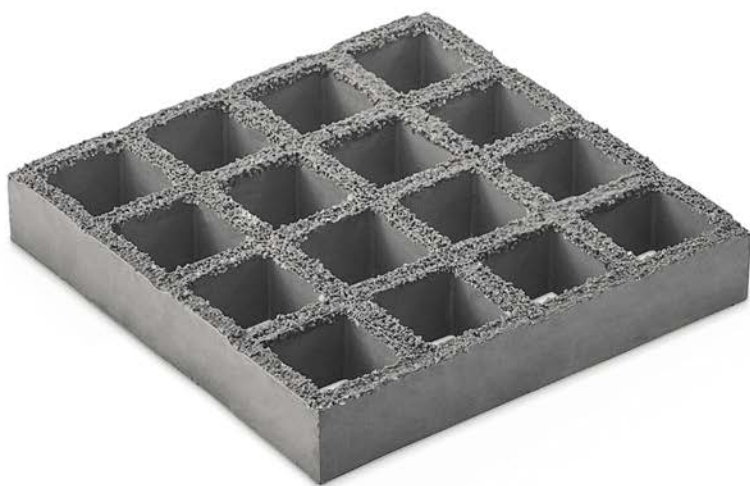


Main elements of a GRP grating:

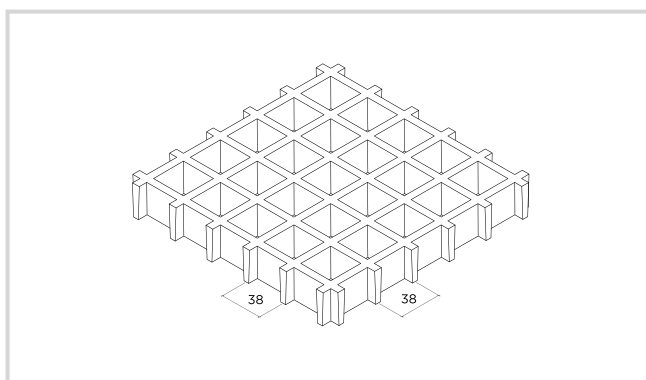
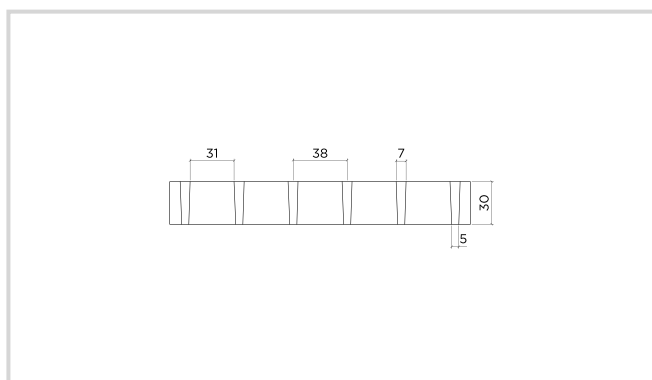
1. Glass fibre
2. Resin

GRP 38×38 GRATINGS

Gratings of glass fibre reinforced plastic with mesh 38x38 mm.



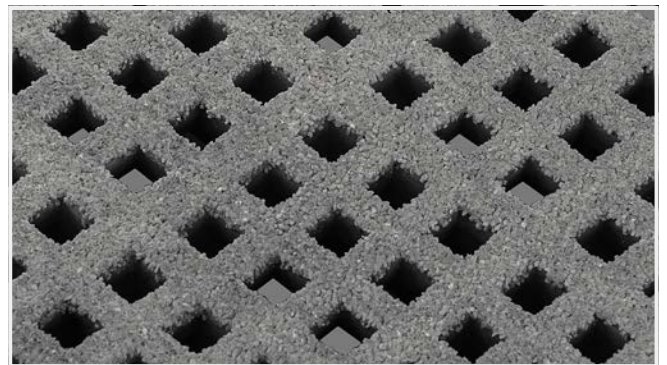
Graphical representation



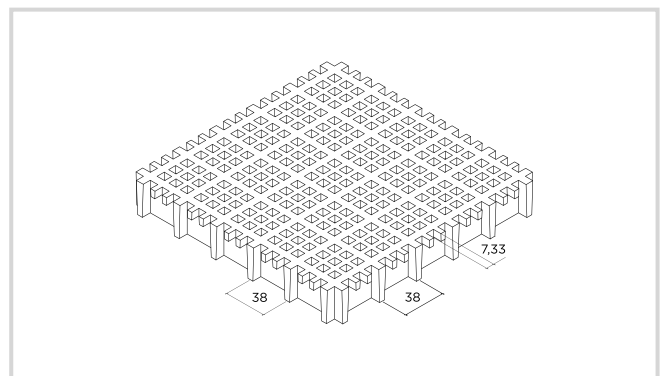
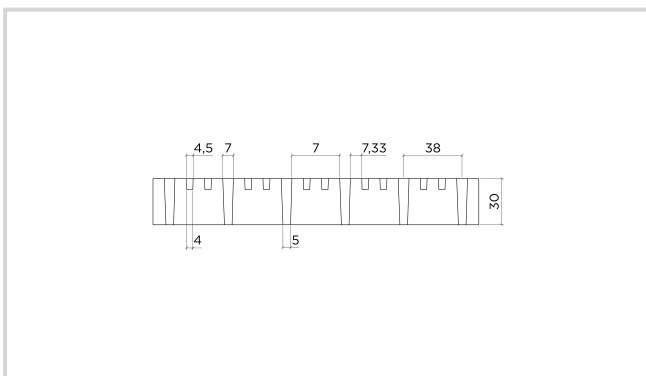
GRP 8×8 GRATINGS



Gratings of glass fibre reinforced plastic with mesh 8x8 mm.

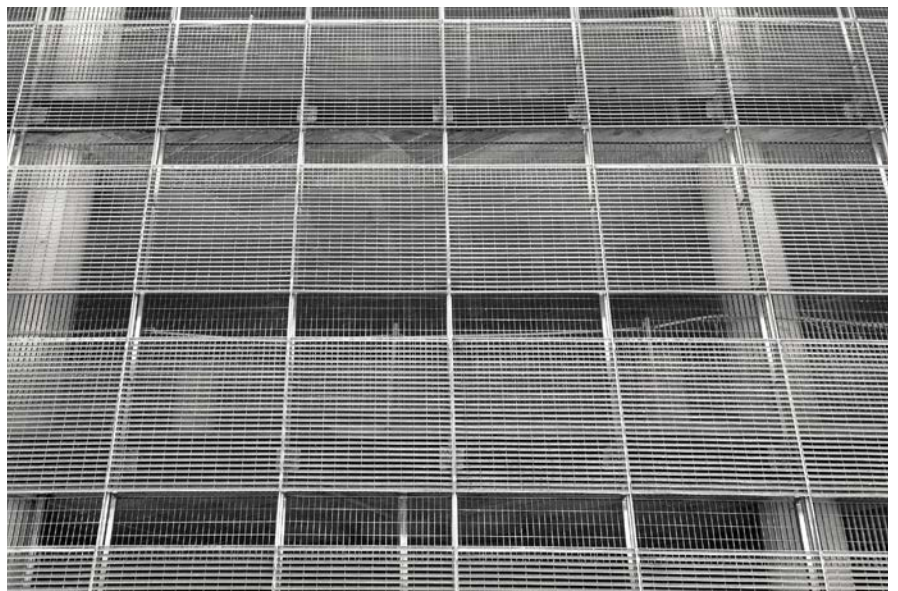


Graphical representation



5. More products

The grating is a versatile product, capable of responding to a multitude of requirements. In Grupo Relesa we have standardized the main solutions among which are **steps, tree guards, drainage channels, shelving or fences**. Do not hesitate to seek our advice for other uses such as **facades, balconies, false ceilings or any other proposal you want to develop**. Also, we carry in stock gratings, panels and steps ready to be shipped. **Ask for our Relesa Express service.**





Steps

In **Grupo Relesa**, we manufacture steps from any type of metal grating described in the previous sections. Once you have chosen the type of floor and the dimensions of the step (LxH) that are available according to their place, support by welding or screwing. Generally, all the steps feature a non-slip front that enhances the visual perception of the unevenness and safety against slipping.



SUPPORT STEP



Step of metal grating, with sides of the same height as bearing bars, which is mounted on the auxiliary structure of the side rails.

Graphical representation

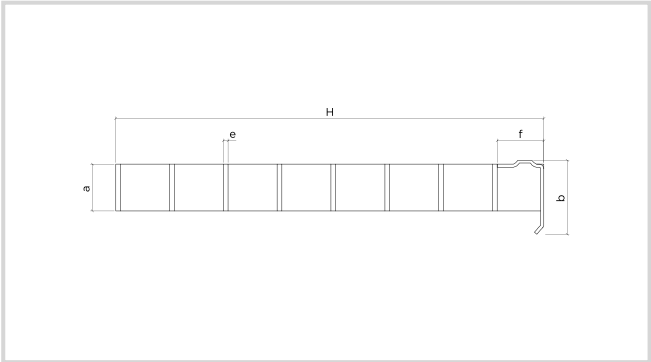


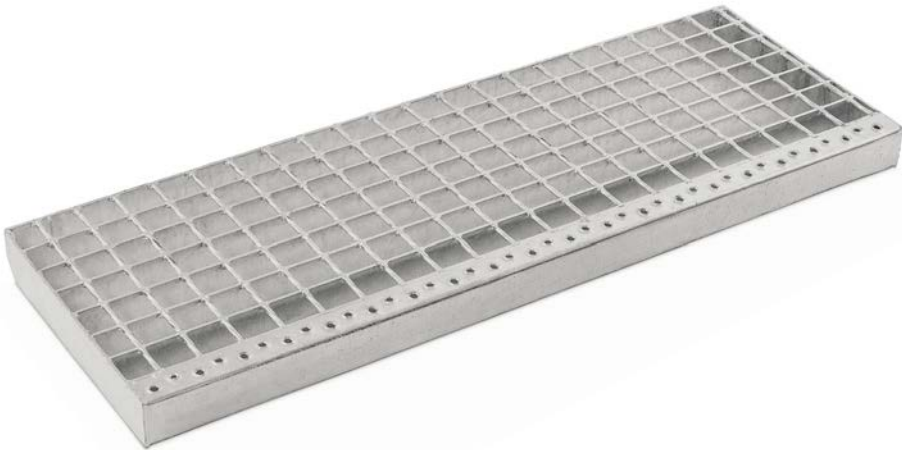
Table of manufacture

LENGTH (L)	WIDTH (H)	a	e	b	f		
700	240	30	2	45	30		
	275						
	310						
800	240						
	275						
	310						
900	240		3				
	275						
	310						
1000	240						
	275						
	310						

If you need another measure, do not hesitate to contact us.



STEP FOR WELDING



Step of metal grating, with sides the higher than the bearing bars, which is welded to the side rails of the stair.

Graphical representation

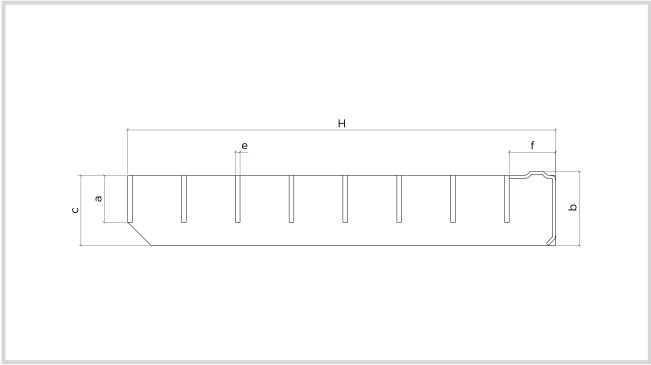


Table of manufacture

LENGTH (L)	WIDTH (H)	a	e	c	b	f			
700	240	30	2	45	45	30			
	275								
	310								
800	240								
	275								
	310								
900	240		3						
	275								
	310								
1000	240								
	275								
	310								

If you need another measure, do not hesitate to contact us.

SCREW IN STEP



Step of metal grating, with sides higher than the bearing bars, which can be screwed directly to the side rails of the stair.

Graphical representation

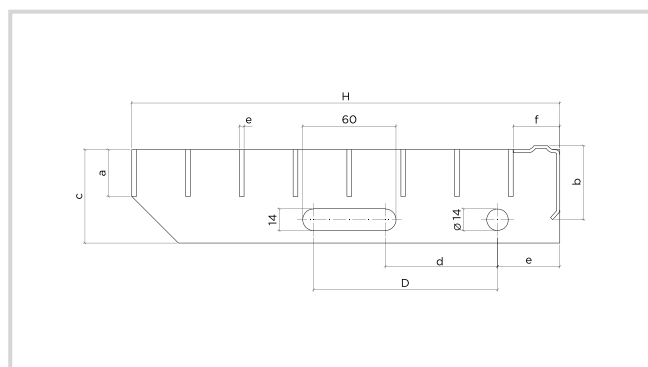


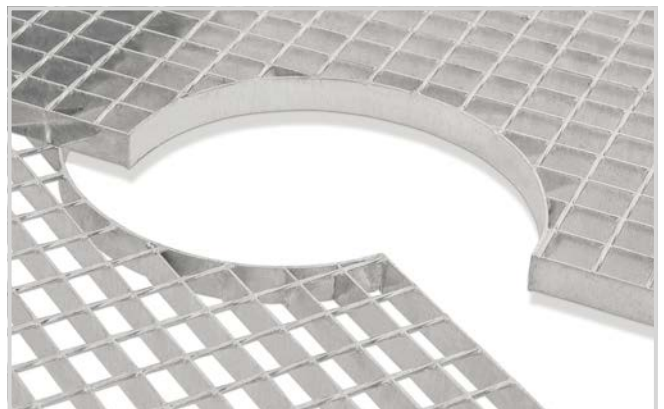
Table of manufacture

WIDTH (L)	WIDTH (H)	a	e	b	c	d/D	e		
700	240	30	2	45	60	70/116	40		
	275					110/156			
	310								
800	240					70/116			
	275					110/156			
	310								
900	240		3			70/116			
	275					110/156			
	310								
1000	240		3			70/116			
	275					110/156			
	310								

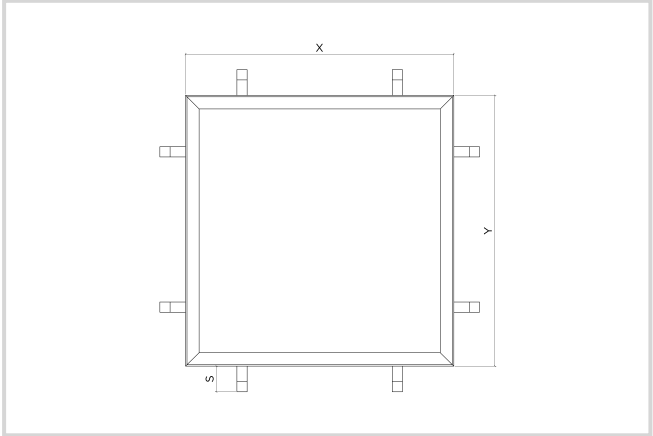
If you need another measure, do not hesitate to contact us.

TREE PROTECTOR

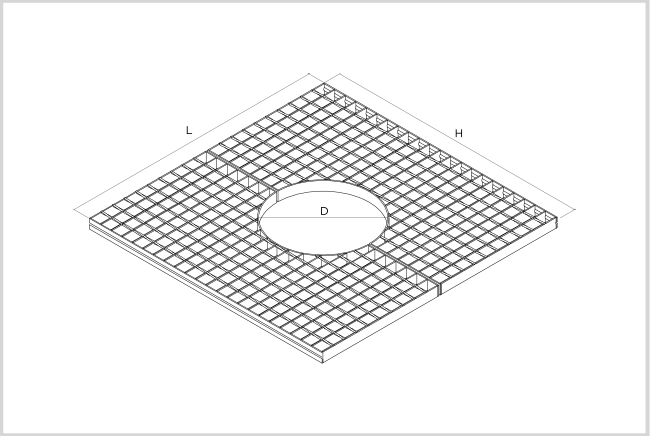
Covers the hole that is left at the base of trees and shrubs in paved areas, to allow their irrigation and growth, and that avoids the risk of falling. The tree protector is defined by the grille panel and by the perimeter fence where it fits.



Graphical representation



Side view



Isometric view

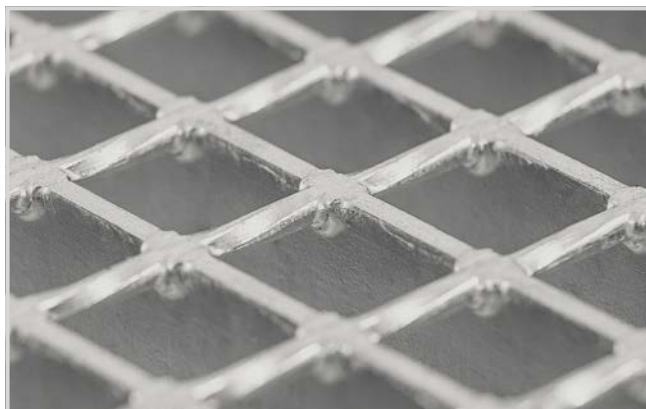
Table of manufacture

TREE GUARD PANEL DIMENSION						
REFERENCE	A	B	h	e	D	TYPE OF FINISH
RE-ALC-1	490	490	30	2	300	GALVANIZING
RE-ALC-2	560	560				
RE-ALC-3	695	695				
RE-ALC-4	765	765				
RE-ALC-5	900	900	35			
RE-ALC-6	970	970				
RE-ALC-7	1105	1105				
RE-ALC-8	1175	1175				

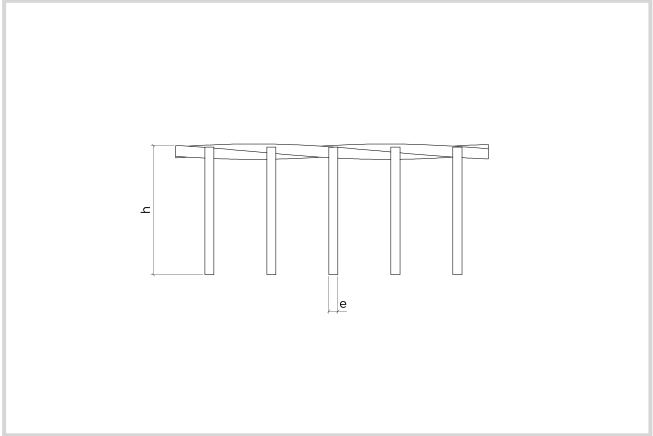
DIMENSIONS OF THE TREE GUARD ENCLOSURE				
REFERENCE	X	Y	S	TYPE OF FINISH
CR-ALC-1	504	504	35	GALVANIZING
CR-ALC-2	574	574		
CR-ALC-3	709	709		
CR-ALC-4	779	779		
CR-ALC-5	914	914	40	
CR-ALC-6	984	984		
CR-ALC-7	1119	1119		
CR-ALC-8	1189	1189		

DRAINAGE CHANNELS

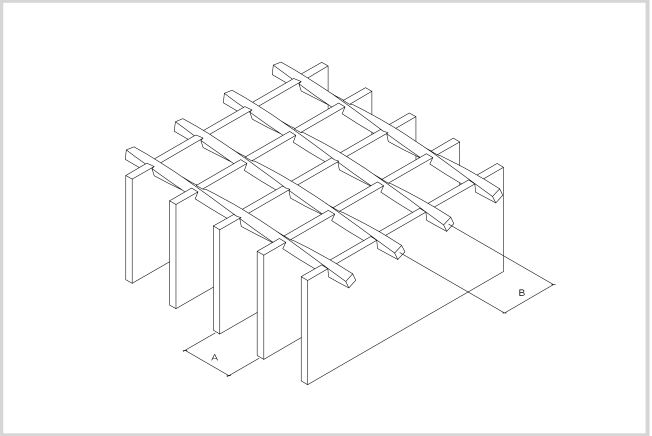
The gratings for drainage channels regulate the covering and closing devices for traffic zones used by pedestrians and vehicles and classified into categories according to the function of the installation site.



Graphical representation



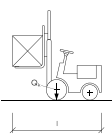
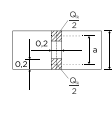
Side view



Isometric view

Table of manufacture

THEORETICAL LOAD CHART FOR STEEL S235 JR (STANDARD CALCULATION: CTE/EC3) MESH AxB(mm): 34x38 Y 34x76 (UNE 36750)							
HEAVY LOADS		MAXIMUM ALLOWANCE FOR DEFLECTIO (mm) ≤ L/200 Y ≤ 5mm					
MESH DESIGNATION		34X38		34X76			
VEHICLE CLASSES	TRACKS	40x3	40x4	40x5	50x5	60x5	70x5
CLASS 2 (10KN)	200x200	421	515	620	877	1166	1513
CLASS 3 (30KN)	400x200	292	332	372	460	558	677
CLASS 4 (90KN)	600x250	228	260	291	358	421	487

THEORETICAL LOAD CHART FOR STEEL S235 JR (STANDARD CALCULATION: UNE-EN 1991-1-1 2003/CTE/EC3) MESH AxB(mm): 34x38 Y 34x76								
HEAVY LOADS			MAXIMUM ALLOWANCE FOR DEFLECTION (mm) ≤ L/200 Y ≤ 5mm					
MESH DESIGNATION (AXB)			34X38		34X76			
CLASS OF FORKLIFT VEHICLE (axle load)	WHEEL TYPE	LOAD ON WHEELS (KN)	40x3	40x4	40x5	50x5	60x5	70x5
FL 1 (26KN)	PNEUMATIC WHEELS	18,2	276	328	386	529	689	884
	SOLID WHEELS	26	224	260	301	400	513	650
FL 2 (40KN)	PNEUMATIC WHEELS	28	215	249	286	379	484	611
	SOLID WHEELS	40	-	204	230	295	369	458
FL 3 (63KN)	PNEUMATIC WHEELS	44,1	-	-	218	277	344	425
	SOLID WHEELS	63			-	224	271	327
FL 4 (90KN)	PNEUMATIC WHEELS	63			-	224	271	327
	SOLID WHEELS	90			-	-	220	259
FL 5 (140KN)	PNEUMATIC WHEELS	98			-	-	210	246
	SOLID WHEELS	140			-	-	-	202
FL 6 (170KN)	PNEUMATIC WHEELS	119			-	-	-	220
	SOLID WHEELS	170			-	-	-	-

For other load values, consult our technical department.



Shelves

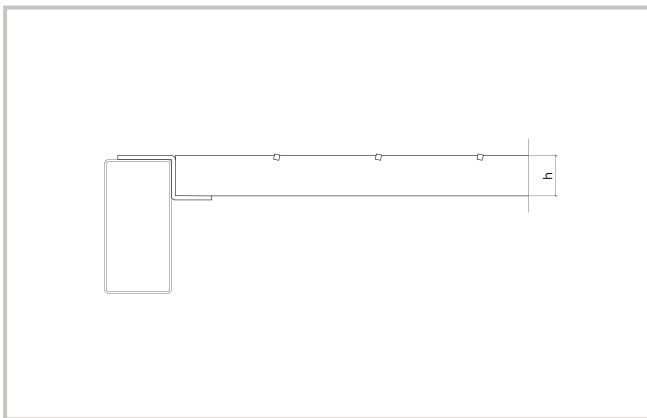
Grupo Relesa has launched a line of shelves, especially directed to the storage systems. The high resistance, along with a high permeability of the material, make this product an ideal solution for your project.

SHELVING INSERTED WITH Z FRAME

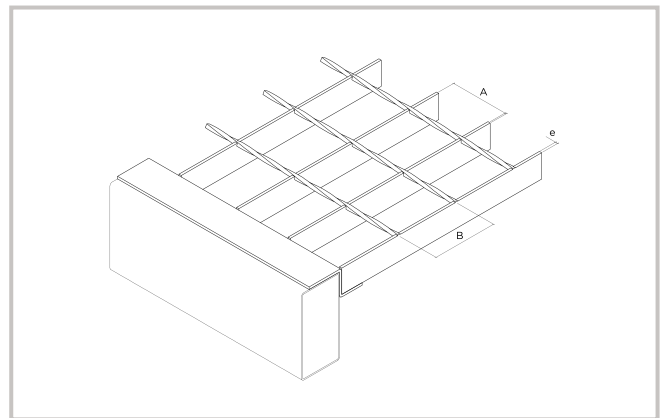


Model for shelving with welded Z frame, which is inserted into the structure, optimizing the free storage space in logistics systems.

Graphical representation



Side view



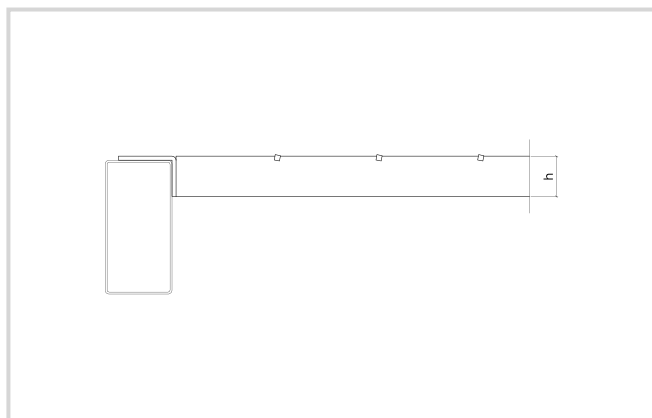
Isometric view

SHELVES INSERTED WITH L FRAME

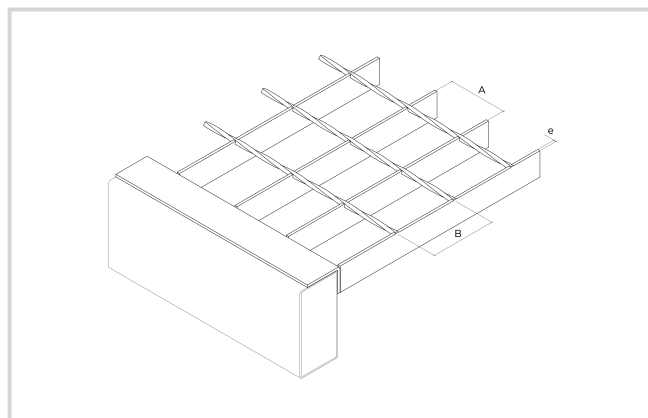


Model for shelving with welded L frame, which is inserted into the structure, optimising the free storage space in logistics systems.

Graphical representation



Side view



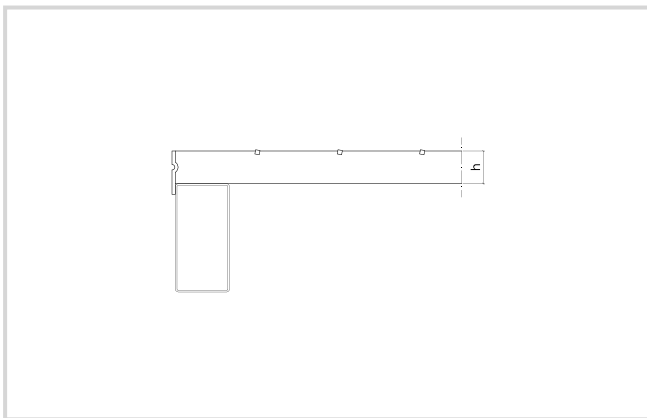
Isometric view

SHELVES SUPPORTED WITH PERIMETER STRIPS OF GREATER HEIGHT

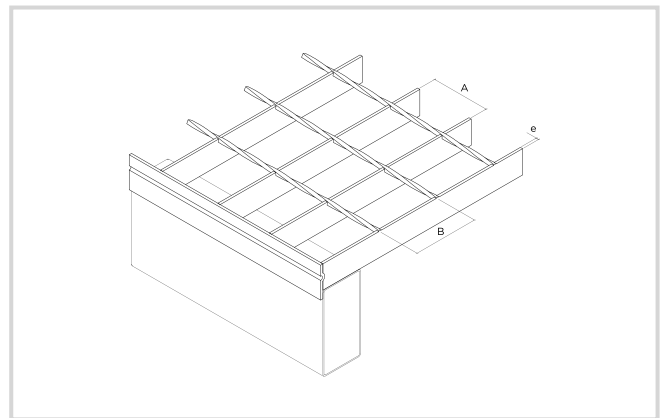


A model for shelving with perimeter strips of greater height to fit the structure and prevent movement of the grating in logistics storage spaces.

Graphical representation



Side view



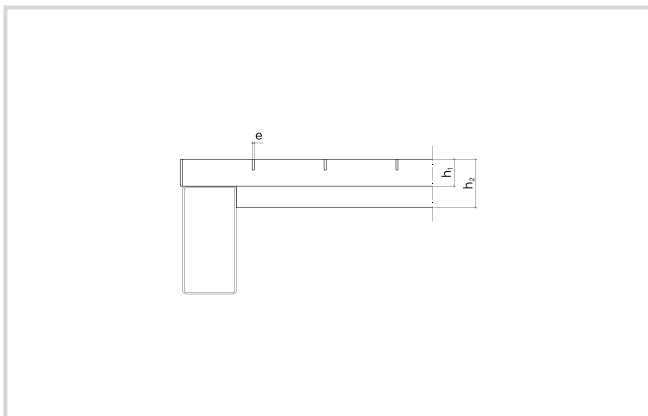
Isometric view

SHELVES SUPPORTED WITH BINDING BARS OF GREATER HEIGHT

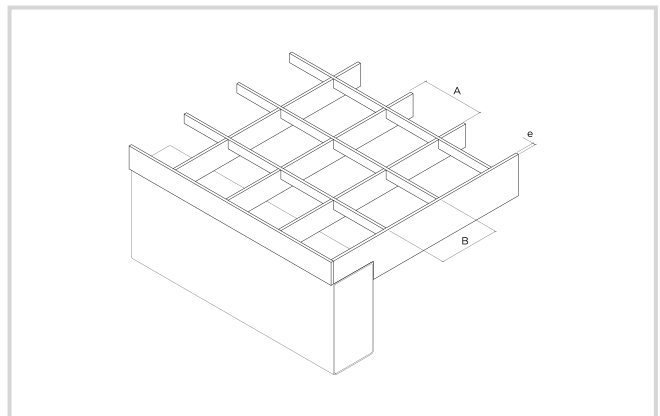
A model for shelving with electrowelded binding bars of greater height, which prevents the movement of the grating in logistics storage systems.



Graphical representation



Side view



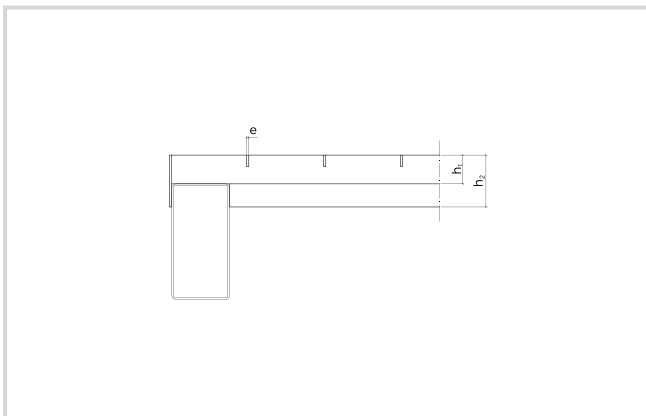
Isometric view

SHELVES SUPPORTED WITH PERIMETER STRIPS OF GREATER HEIGHT

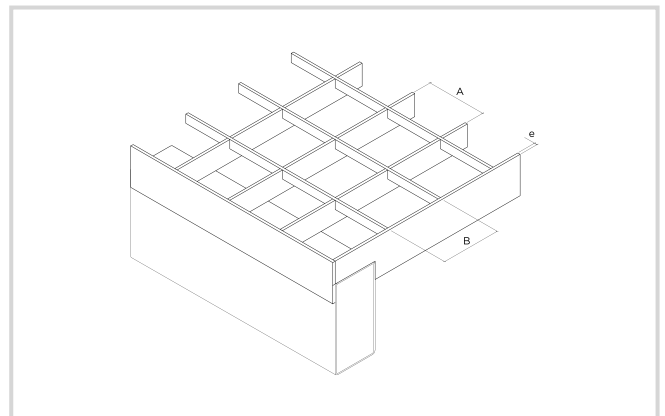


A model for shelving with perimeter strips of greater height to fit the structure and prevent movement of the grating in logistics storage spaces.

Graphical representation



Side view



Isometric view



GRATING FENCE



The electrowelded grating coverage has been designed as a resistant, lasting and economic answer for fencing of spaces. It can be supplied in modules; the assembly is easier and cheaper to do not require skilled labour.

Graphical representation

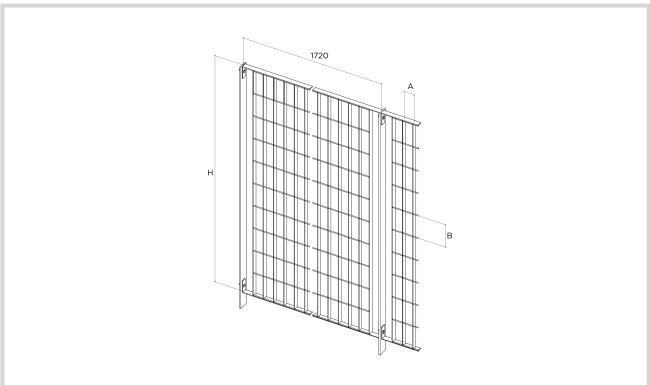
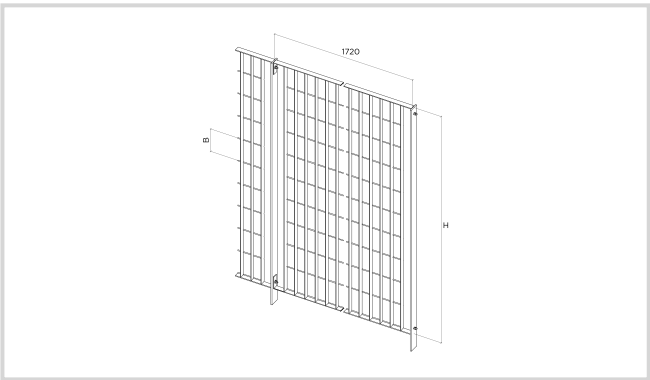


Table of manufacture

MESH (AXB)	HEIGHT H	MOUNTING DEPTH
68x76 68x135 68x200	H<1000	250
	1000<H<1700	250
	1701<H<2100	300
	2100<H<2500	350



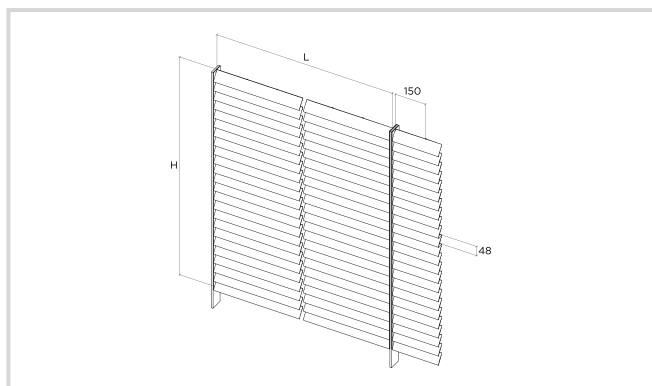
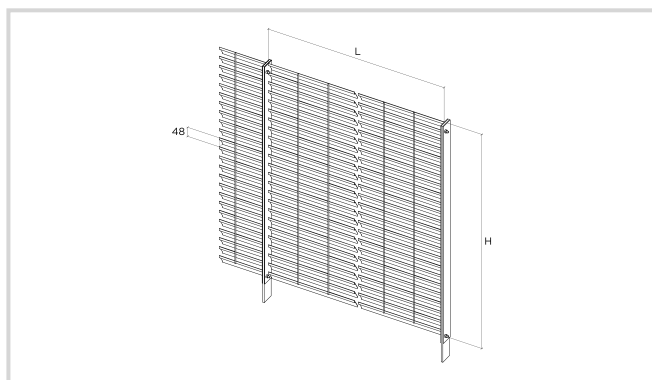
CONCEALED SLATS FENCE



Electrowelded grating fence, made of inclined slats, which control the passage of air and prevents seeing through it. Since it is supplied in modules, assembly is easier and cheaper and does not require skilled labour.

In addition, they can be supplied in panels.

Graphical representation



Manufacturing chart for fences

MESH (AXB)	LxH (mm)
48x150	1500x1250

Manufacturing chart for panels

MESH (AXB)	PANEL DIMENSION (mm)	WEIGHT (kg/m ²)
48x150	3000x1250	20,9



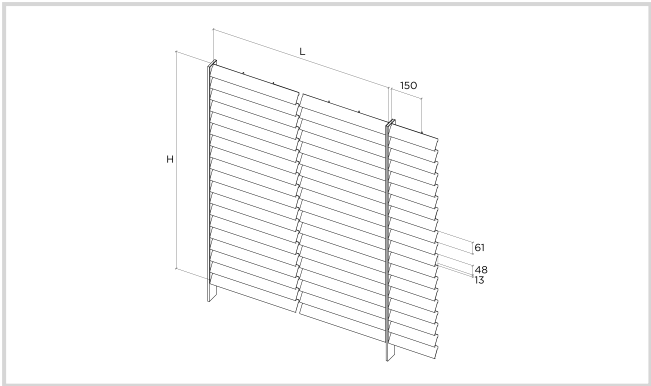
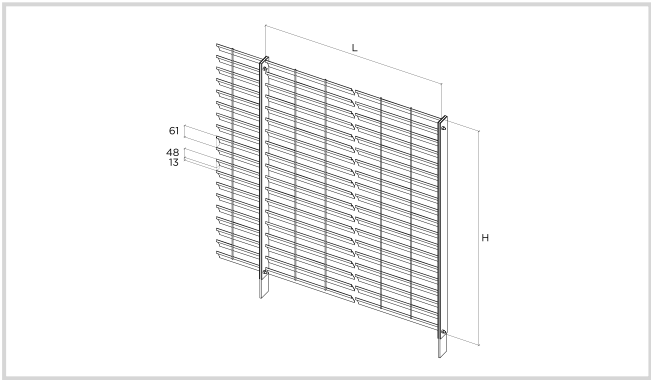
SEMI-CONCEALED SLATS FENCE



Electrowelded grating fence, made of inclined slats, which controls the passage of air and limits seeing through it. Since it is supplied in modules, assembly is easier and cheaper and does not require skilled labour.

In addition, they can be supplied in panels.

Graphical representation



Manufacturing chart for fences

MESH (AXB)	LxH (mm)
61x150	1500x1200

Manufacturing chart for panels

MESH (AXB)	PANEL DIMENSION (mm)	WEIGHT (kg/m²)
61x150	3000x1200	16,6

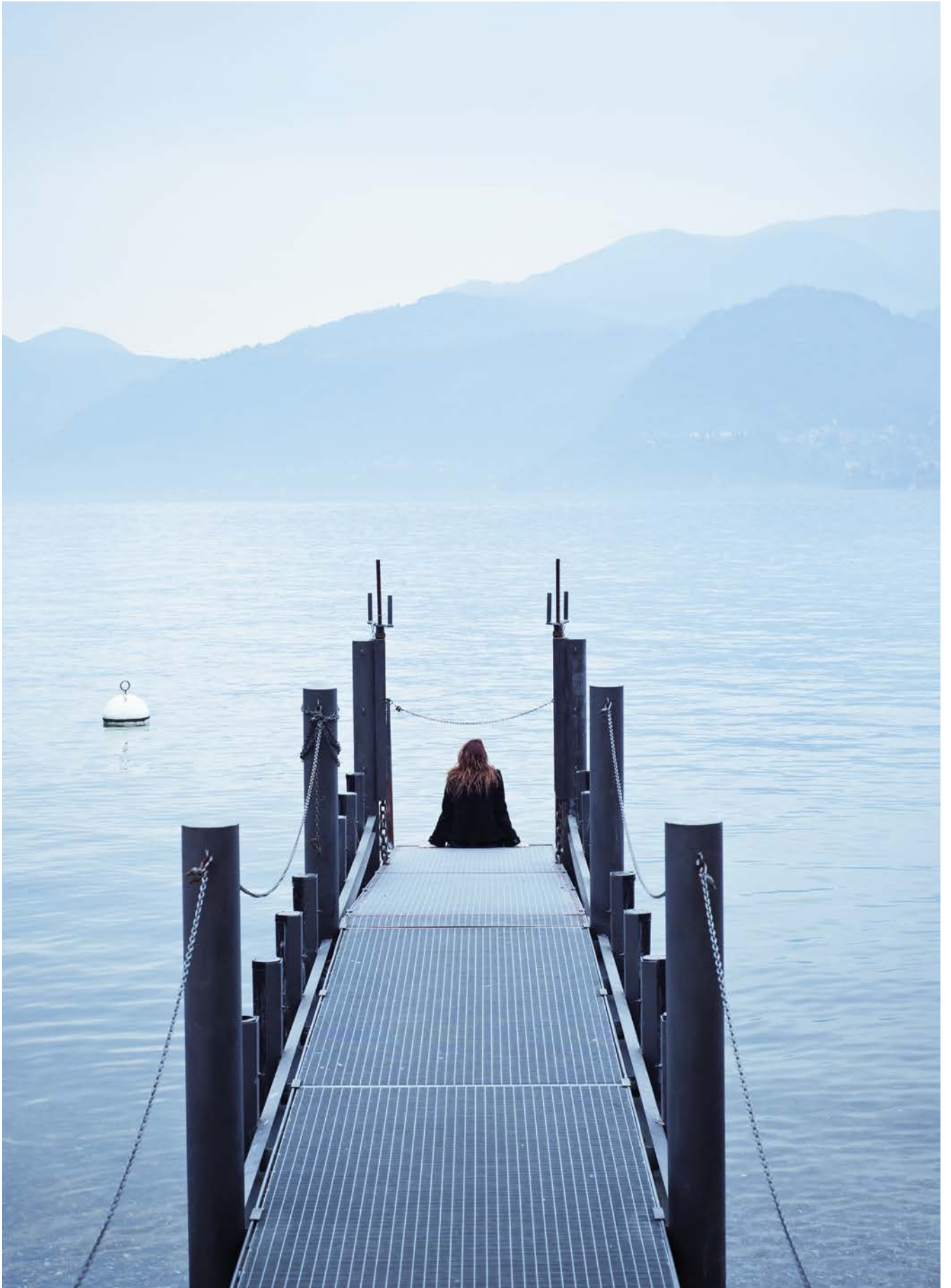
RELESA EXPRESS

Grupo Relesa places at your disposal an immediate supply of gratings, panels and steps from stock. Do not hesitate to contact us.



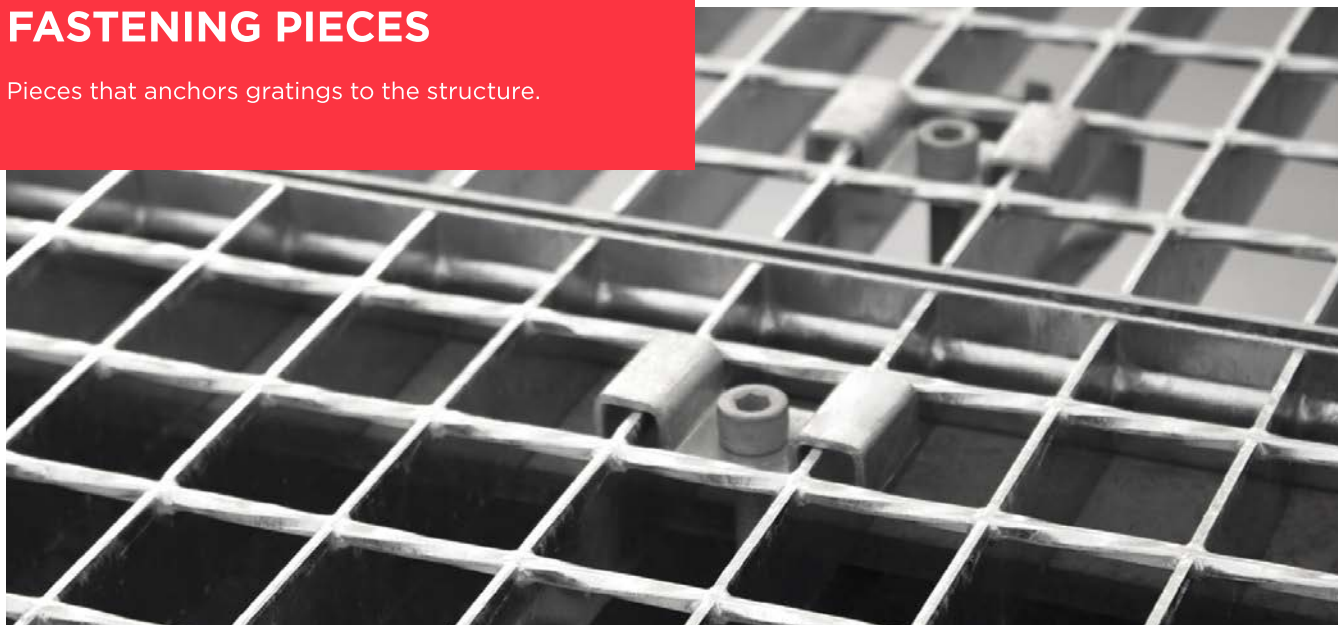
Table of manufacture

MESH SIZE (AxB)							
TYPE	PRODUCT	MESH	HEIGHT GRATING	PLATE THICKNESS	SEPARATOR	LENGTH	WIDTH
ELECTROWELDED	GRATING	34X38	30	2	Ø4E	200 250 300 400 500 600 700 800 900 1000 1200 1500 2000	1000
					Ø4E+PP8x8	1000 2000	
	PANEL			3	Ø4E+PP8x8	1000 2000	
					Ø5E	1000 1500 2000	
	GRATING			2	Ø4E	3050 6100	
	PANEL			3	Ø5E		
PRESSED	GRATING	33X33	30	2	10x2	1000 2000	
					30x2		
				3	10x3		
					30x3		



FASTENING PIECES

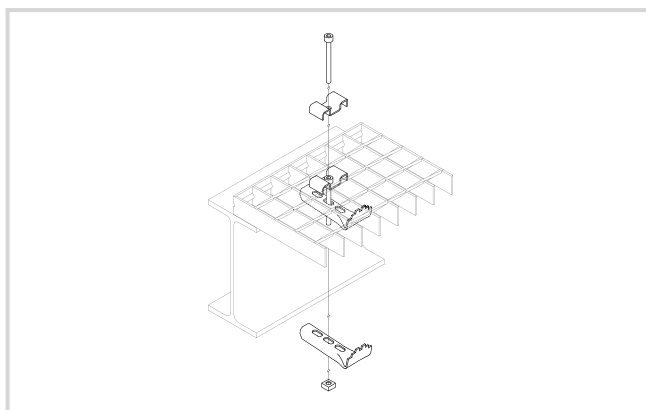
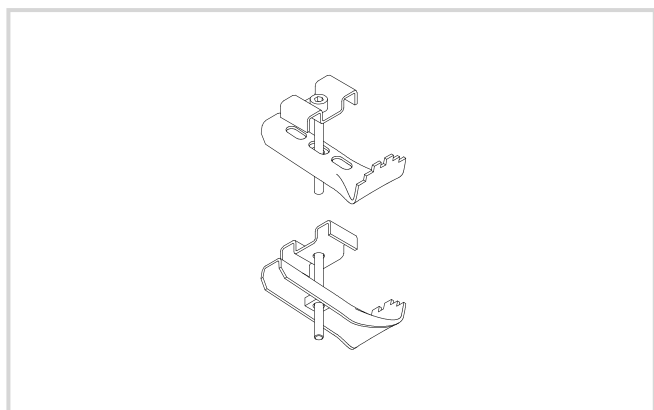
Pieces that anchors gratings to the structure.



FASTENING PIECE 1

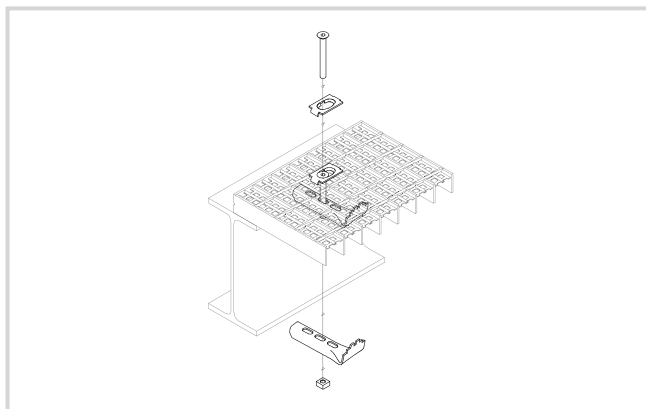
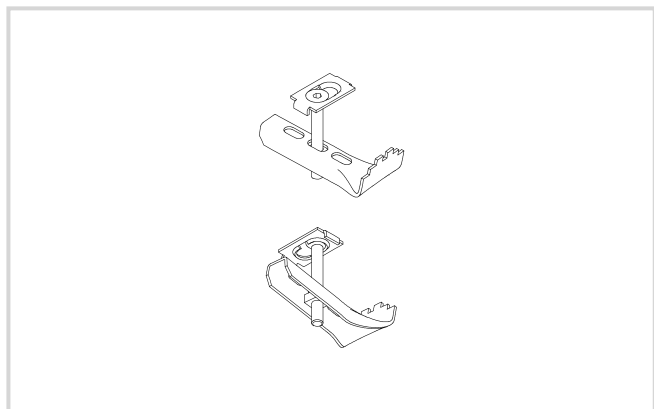
Piece that anchors to the structure gratings with 33, 34* or 35 millimetres of space between meshes.

**Except for those with protection profile 8x8*



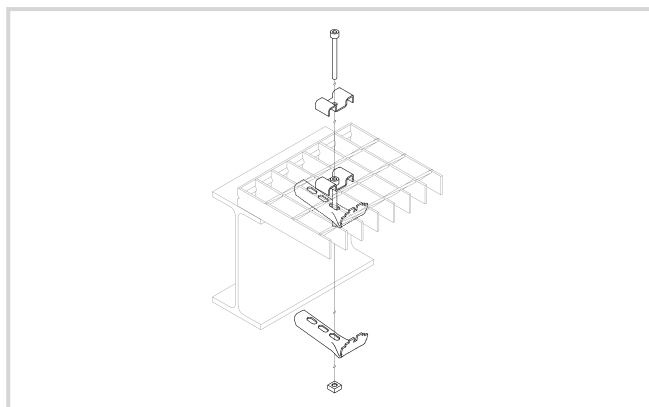
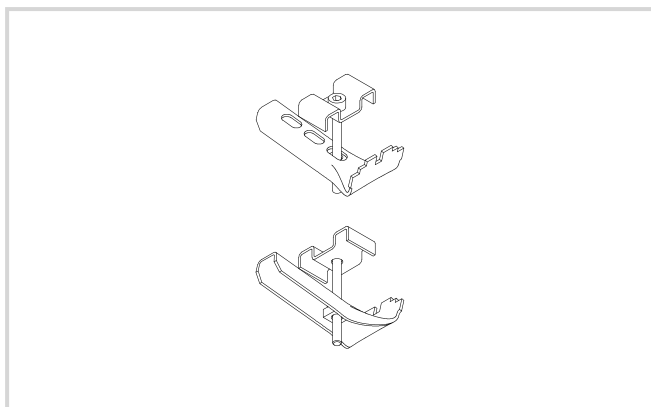
FASTENING PIECE 2

Piece that anchors to the structure gratings with protection profile of 8x8 mm and 34 millimetres of space between meshes.



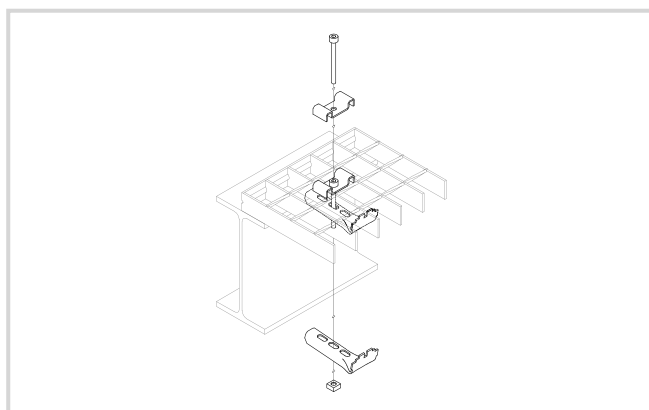
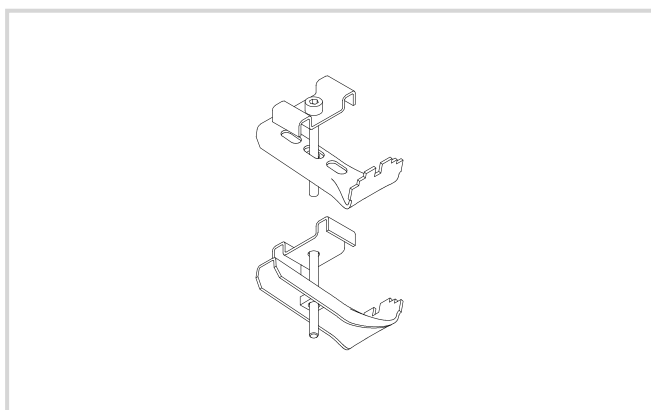
FASTENING PIECE 3

Piece that anchors to the structure gratings with 30 millimetres of space between meshes.



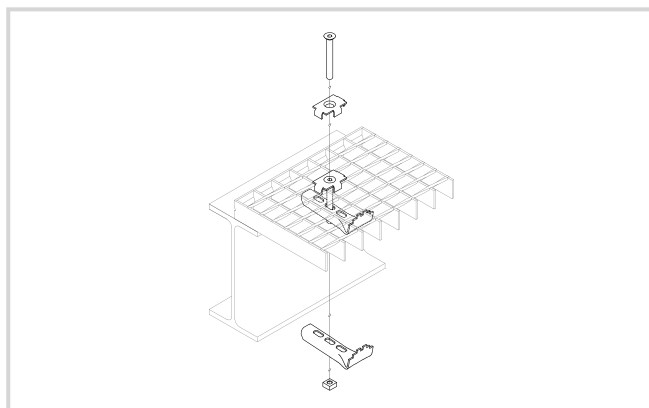
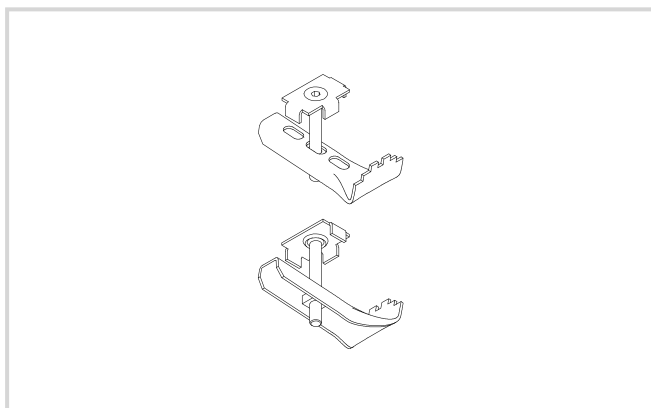
FASTENING PIECE 4

Piece that anchors to the structure gratings with 41 or 42 millimetres of space between meshes.



FASTENING PIECE 5

Piece that anchors to the structure gratings whose meshes are 21x23 and 34x23.



If you can not find the piece you need, do not hesitate to contact us.

JOINING PIECES

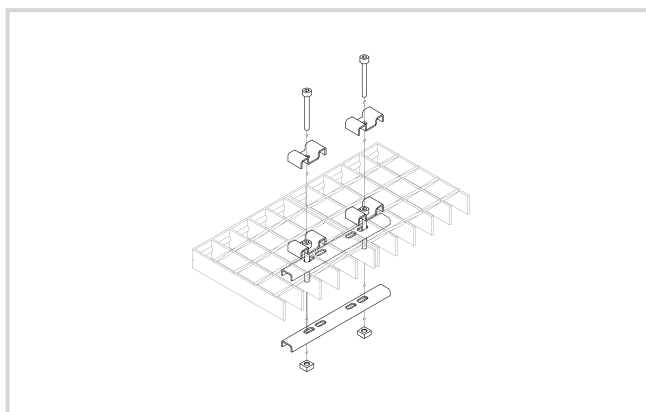
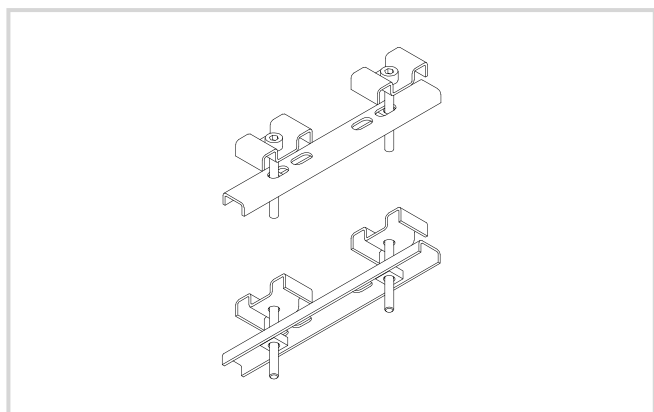
Pieces that anchors gratings to each other.



JOINING PIECE 1

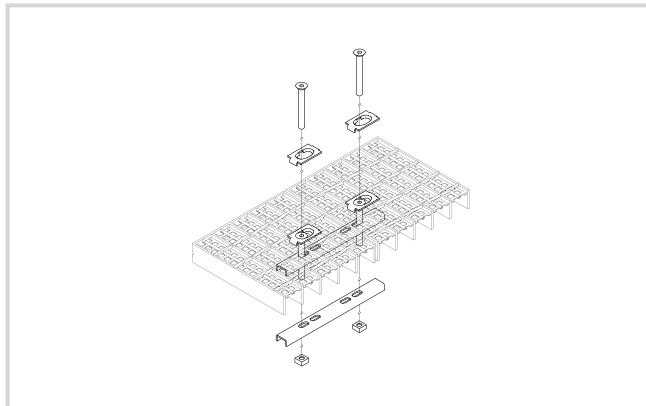
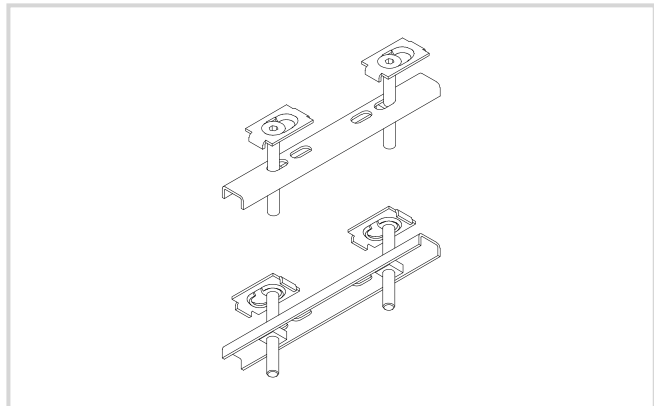
Piece that anchors to the structure gratings with 33, 34* or 35 millimetres of space between meshes.

**Except for those with protection profile 8x8*



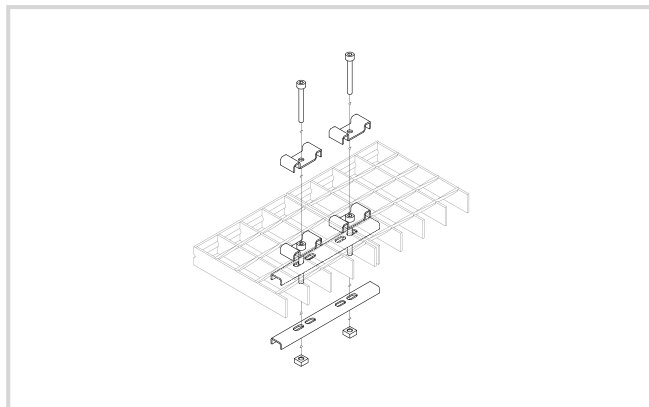
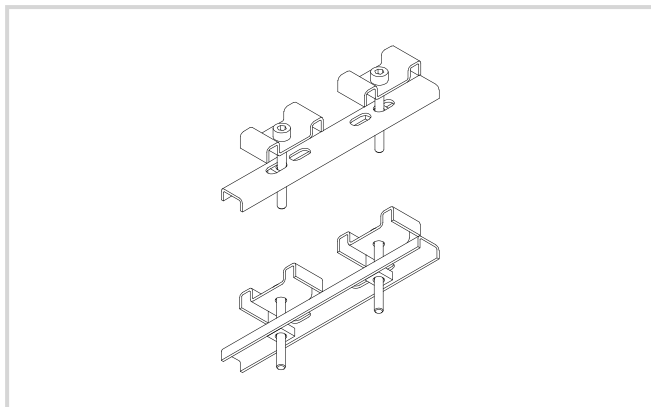
JOINING PIECE 2

Piece that anchors to the structure gratings with protection profile of 8x8 mm and 34 millimetres of space between meshes.



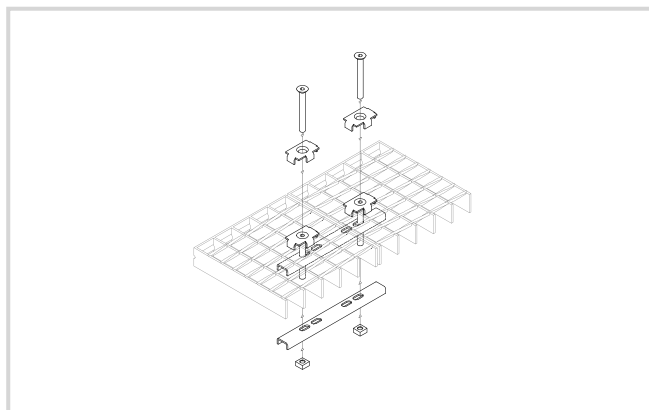
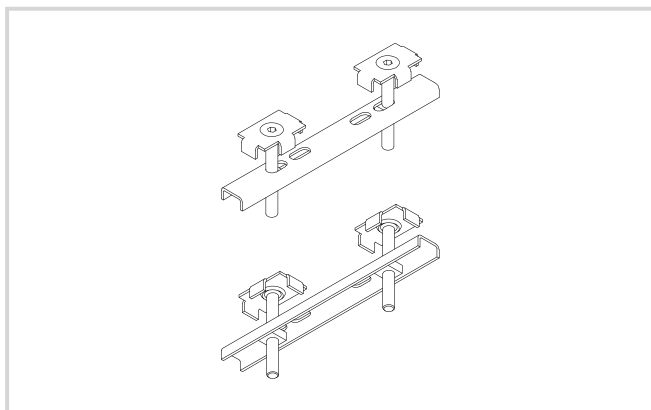
JOINING PIECE 3

Piece that anchors to the structure gratings with 41 or 42 millimetres of space between meshes.



JOINING PIECE 4

Piece that anchors to the structure gratings whose meshes are 21x23 and 34x23.



If you can not find the piece you need, do not hesitate to contact us.





**We are proud of our
work, from the large-scale
projects to those of more
everyday use.**

Galvanization

In Galvame, one of the three companies that make up Grupo Relesa, we work with the enthusiasm and commitment to offer our customers the best service. Our facilities are equipped with the most advanced technology, which allows us to carry out a **comprehensive control over the process of galvanizing and be respectful of the environment.**

Hot dip galvanizing is the process by which zinc coatings are obtained in products and articles made of steel or other ferrous materials, which provide **protection against rust and corrosion**, and ensure their use and conservation over time.

The coating is not only a surface deposition, but there is a metal alloy, leading to three layers with different compositions of zinc and steel, and a fourth, more external, composed of pure zinc. These alloys are harder than the steel base and **resistant to knocks and abrasion.**

There is no need for maintenance and it is economical, because the protection is assured if there is zinc coating on the surface of the material and, in the case of that part of the steel to be exposed, it is self protected through galvanic coupling.

If you need more technical specifications, please do not hesitate to contact us and access **www.galvame.com**



The **UNE-EN ISO 1461** standard “**Hot dip galvanized coatings on fabricated iron and steel articles**” establishes the minimum admissible values of galvanized coating thickness and mass:

ARTICLE THICKNESS	LOCAL COATING (MINIMUM)		MEDIUM COATING (MINIMUM)	
	g/m ²	μm	g/m ²	μm
STEEL > 6 mm	505	70	610	85
STEEL > 3 mm to ≤ 6 mm	395	55	505	70
STEEL ≥ 1,5 mm to ≤ 3mm	325	45	395	55
STEEL < 1,5 mm	250	35	325	45
CASTINGS ≥ 6 mm	505	70	575	80
CASTINGS < 6 mm	430	60	505	70

The characteristics and quality of the zinc used for the galvanization came collected according to UNE-EN 1179 Standard “Zinc and zinc alloys. Primary zinc”.

On the other hand, the **UNE-EN ISO 14713-1: 2011** standard establishes different categories of atmospheric corrosivity and relates them to the corrosion rate of zinc.

CATEGORY	TYPICAL ENVIRONMENTS	ZINC CORROSION SPEED (μm/year)
C1	Inside: Dry	≤ 0,1
C2	Inside: Occasional condensation Outside: Rural exhibition inside of the country	0,1 to 0,7
C3	Inside: High humidity, slightly polluted air Outside: urban inside of the country or soft coastal	0,7 to 2
C4	Inside: Swimming pools, chemical plants Outside: Industrial inside of the country or urban coastal.	2 to 4
C5	Outside: Very humid or coastal high salinity industrial	4 to 8

The table does not include the category CX for severe industrial zones, tropical zones ... If you have any doubt, ask for our advice.

Technical Documentation

Your project is our greatest commitment. We want to provide you with the choice and design of the material with the following documents.

Do you want to know more about our products?

**Register and receive the complete
catalogue in your email inbox.**



GRUPO RELESA